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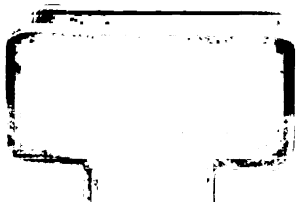

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OBSERVATIONS

MADE DURING A

VOYAGE ROUND THE WORLD,

ON

PHYSICAL GEOGRAPHY,

NATURAL HISTORY,

AND

ETHIC PHILOSOPHY.

ESPECIALLY ON

1. THE EARTH AND ITS STRATA,
2. WATER AND THE OCEAN,
3. THE ATMOSPHERE,
4. THE CHANGES OF THE GLOBE,
5. ORGANIC BODIES, AND
6. THE HUMAN SPECIES.

By JOHN REINOLD FORSTER, LLD. F. R. S. and S. A.

AND A MEMBER OF SEVERAL LEARNED ACADEMIES IN EUROPE.

TOTUM IGITUR ILLUD PHILOSOPHIÆ STUDIUM, MIHI QUIDEM IPSE SUMO, & AD VITÆ CONSUETUDINEM & CONSTANTIAM QUANTUM POSSUM & AD DELECTATIONEM ANIMI: NEC ULLUM ARBITROR AUT MAJUS AUT MELIUS A DIIS DATUM MUNUS HOMINI.

M. Tullius Cicero, Acad. Quæst. lib. i.

LONDON:

Printed for G. ROBINSON, in PATER-NOSTER-ROW.

MDCCLXXVIII.

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Jos: Banks

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TO

THE PRESIDENT,

COUNCIL,

AND FELLOWS OF THE

ROYAL SOCIETY

OF LONDON,

INSTITUTED FOR PROMOTING

NATURAL KNOWLEDGE,

THE FOLLOWING SHEETS,

AS THE

RESULT OF ENQUIRIES

MADE IN THE COURSE OF A

VOYAGE ROUND THE WORLD,

BY A FELLOW OF THE SOCIETY,

WHO WAS APPOINTED NATURALIST ON THAT

VOYAGE,

AT THE RECOMMENDATION OF

SEVERAL MEMBERS OF THEIR COUNCIL IN 1772,

ARE WITH PROFOUND RESPECT

AND GRATITUDE

INSCRIBED

BY THEIR MOST HUMBLE

AND MOST OBEDIENT SERVANT

JOHN REINOLD FORSTER.

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PREFACE.

THE preſent performance has undergone ſo many changes in its form ſince my return from my voyage, that the public will excuſe my delay in publiſhing it, and ſome of my friends, will I flatter myſelf, be able to judge, what conſiderable improvements it has received both from their friendly ſtrictures, and my own meditation and reading. The ſubject I have treated is ſo varied, that I have been obliged to have recourſe in many points to the Sages of every age: and I have either been inſtructed by them, or led by their hints to ſome new obſervations, or obliged to diſſent from their opinions. In regard to the Phyſical Geography of our Globe I am much indebted to the Count de BUFFON, and to the ingenious Chevalier TORBERN BERGMAN; in regard to the Philoſophical Hiſtory of the Human Species, I have been often delighted with the ideas of that excellent Philoſopher of Baſle Mr. JSAAC ISELIN. And the works of Dr. BLUMENBACH and

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Dr. JOHN HUNTER (the author of a Diſſertation, *de hominum varietatibus*) have furniſhed me with ſome anatomical facts. Beſides theſe works I have conſulted many others, and transferred into theſe obſervations ſeveral ideas which though analogous to mine, were however new to me, and ſome of my own I was much pleaſed to find had been already adopted by the moſt ingenious men of the age. My object was nature in its greateſt extent; the Earth, the Sea, the Air, the Organic and Animated Creation, and more particularly that claſs of Beings to which we ourſelves belong. The Hiſtory of Mankind has often been attempted; many writers have deſcribed the manners and characters of individuals, but few have traced the hiſtory of men in general, conſidered as one large body. What is extant on that head in the French and Engliſh languages, contains either ſlight ſketches and fragments, or ſyſtems formed in the cloſet or at leaſt in the boſom of a nation highly civilized, and therefore in many reſpects degenerated from its original ſimplicity. None of theſe authors ever had the opportunity of contemplating mankind in this ſtate, and its various ſtages from that of the moſt wretched ſavages, removed but in the firſt degree from abſolute animality, to the more poliſhed and civilized inhabitants of the Friendly and Society Iſles. Facts are the baſis of the whole ſtructure; a few fair inferences enabled me to finiſh the whole. My aim has been inſtruction,

and

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and the inveſtigation of truth, as far as lies in my power. I cannot expect to have ſatisfied every body. To receive the approbation of the good and learned will be my ambition. If proofs be brought that my opinions are not admiſſible, and if theſe arguments be communicated without rancour, I am open to conviction, and ſhall think myſelf much indebted to the man, who will be kind enough to convince me of my miſtake in a friendly manner: if on the contrary, ſcurrility and abuſe ſerve inſtead of arguments, the public will not, I hope, have a worſe opinion of me for thinking ſuch treatment beneath any reſentment and unworthy of reply.

London,
May the 30th, 1778.

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JOURNAL

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JOURNAL

OF THE

VOYAGE ROUND THE WORLD.

IN THE RESOLUTION.

JULY. 1772

13. HIS Majesty's sloops Resolution and Adventure sailed from Plymouth.
20. Made the coast of Gallicia in Spain, between the Capes Prior and Ortiguera.
22. Saw the light-house of Corunna.
23. Passed three Spanish men of war, one of which insulted the British flag.
28. Saw Porto-Santo in Madeira.—Anchored in the road of Funchal.

AUGUST

1. In the evening, sailed from Madeira.
4. Saw the Island of Palma, one of the Canaries.
5. Saw the Isle of Ferro, another of the Canaries.
11. Passed Bonavista, one of the Cape Verd Islands.
12. Saw Mayo and San Jago, two of the Cape Verd Islands.—In the afternoon anchored in Porto-Praya, on the latter.
14. Sailed from San Jago.

SEPTEMBER.

9. Crossed the equinoctial line.

OCTOBER.

29. Made the Cape of Good Hope.
30. Anchored in Table Bay.

NOVEMBER.

22. Sailed from the Cape of Good Hope for the South.

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1772. DECEMBER.

10. Saw ice floating in the ocean the first time, being in 51° ± S. lat. and 21° ± E. long. from Greenwich.

14. Saw great fields of ice, nearly in 55° S. and between 22° and 24° E.

1773. JANUARY.

2. Our latitude about 59° S. and long. 9° 30′ E. We turn back to the Eastward.

17. Crossed the antarctic circle the first time, and advanced to 67° 10′ S. in 39° 40′ E.

FEBRUARY.

2. In search of M. de Kerguelen's Land, we reach 48° 36′ S. and 60 ± E.

8. Lost company of the Adventure, for the first time, in a fog.

24. Saw field ice in about 62° S. and 95° E.

MARCH.

25. Saw the coast of New Zeeland, to the south of West Cape.

26. Anchored in Dusky Bay.

27. Removed into a cove called Pickersgill Harbour.

APRIL.

29. Sailed out of that cove.

MAY.

11. Cleared the North entrance of Dusky Bay.

17. Saw several water spouts in Cook's Strait.

18. Anchored in Queen Charlotte's Sound, where we rejoined the Adventure.

JUNE.

7. Sailed from Queen Charlotte's Sound.

JULY.

9. In lat. 43° ± S. and long. 146° ± W.

AUGUST.

11. Discovered a new low island, which we called Resolution, in 17° 24′ S. and 141° 39′ W.—In the evening discovered another, which received the name of Doubtful Island, in 17° 20′ S. and 142° 38′ W.

12. Discovered a low island, which we named Furneaux Island, in 17° 5′ S. and 143° 16′ W.

13. Discovered a fourth, which we named Adventure Island, in 17° 4′ S. and 144° 30′ W.—Passed Chain Island in the afternoon.

15. Saw Maitea, which captain Wallis calls Osnabruck Island, in 17° 48′ S. and 148° 10′ W.—In the evening saw Taheitee.

16. The Resolution struck on the coast of Taheitee, but was got off again.

17. Both ships anchored in Aitepeha harbour, in the lesser peninsula of Taheitee, named Tiarraboo.

24. Sailed from Aitepeha harbour.

25. Anchored in Matavaï Bay, on the greater peninsula of Taheitee, named Tobreonoo. Its North point, called Point Venus, is situated in 17° 29′ 15″ S. and 149° 35′ W.

SEPTEMBER.

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SEPTEMBER. 1773.

1. Sailed from Taheitee.
2. Saw Huahine, one of the Society Iſlands.
3. Saw Raietea, Tahà, and Borabora, three of the Society Iſlands; and anchored in Wharrè-harbour, on Huahine, in 16° 44′ S. and 151° 7′ W.
7. Sailed from Huahine.
8. Anchored in Hamaneno harbour, on Raietea, ſituated in 16° 45′ S. and 151° 34½′ W.
14. Two boats were ſent to the Iſle of Tahà.
17. We ſailed from Raietea.—Paſſed by Borabora, in 16° 27′ S. and 151° 50′ W. alſo paſſed to the Southward of Mowrùa, in 16° 25′ S. and 152° 8′ W.
23. Diſcovered a low iſland, which we named Hervey's Iſland in 19° 18′ S. and 158° 54′ W.

OCTOBER.

2. In the evening ſaw Eäoowhe, which Taſman calls Middleburg Iſland, which is about four leagues long; its middle lying in 21° 22′ S. and 174° 42′ W.
3. Anchored in the road off its N. W. end.
4. Sailed, and in the evening came to an anchor in Van Diemen's road, at the N.W. end of Tonga-Tabboo, the Amſterdam Iſland of Taſman, which is nearly twenty leagues in circuit, its middle being in 21° 11′ S. and 175° W.
7. Sailed from Tonga-Tabboo.
8. } Saw Pylſtaert Iſland in 22° 26′ S. 175° 59′ W.
10. }
21. Made the coaſt of New-Zeeland near Portland Iſland.
29. Loſt company of the Adventure a ſecond time, and never rejoined her afterwards.

NOVEMBER.

2. Anchored in a bay under Cape Tra-Whittee on the North ſide of Cook's Strait.
3. Anchored in Queen Charlotte's Sound the ſecond time.
25. Sailed from New Zeeland.

DECEMBER.

6. In the evening croſſed the point of the Antipodes of London.
12. Saw the firſt ice this ſeaſon in 62° ± S. and between 172° and 173° W.
15. Saw field-ice in 66° S. and 158° W.
20. Croſſed the antarctic circle, advancing a ſecond time into the frigid zone in 147° 30′ W.
25. Left the frigid zone in 135° W. after ſailing upwards of 12° of longitude within it.

JANUARY. 1774.

11. Reached the latitude of 47° 51′ S. and longitude 122° 30′ ± W.
26. Croſſed the antarctic circle again, and entered the frigid zone the third time in 109° 40′ W.
30. We were ſtopped by immenſe ice-fields in 71° 10′ 30″ S. and 107° ± W. that being the furtheſt puſh towards the South Pole which has hitherto been made.

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1774. FEBRUARY.

22. to 25. Went in queſt of the ſuppoſed continent of Juan Fernandez, without finding it, between 36° and 38° S. and between 94° and 101° W.

MARCH.

11. Saw Eaſter Iſland, or Waihù, ſituated in 27° 5′ 30″ S. and in 109° 46′ 45″ W.

14. Anchored at its S. W. end.

16. Sailed from Eaſter Iſland.

APRIL.

6. Diſcovered Hood's Iſland, a rock hitherto unknown, belonging to the cluſter of iſlands called the Marqueſas.

7. Saw Heevaroa, (la Dominica) Onateyo, (St. Pedro) and Waitahù, (St. Chriſtina) three of the Marqueſas. – In the evening anchored at Waitahù in Madre-de-Dios harbour, otherwiſe called Reſolution-Bay, ſituated in 9° 55′ 30″ S. and 139° 8′ 40″ W.

10. Sailed from the Marqueſas.

Saw Mr. Byron's King George's Iſlands.—Landed on the Eaſternmoſt, called Teoukea, ſituated in 14° 28′ S. and 144° 56′ W.

Fell in with four low iſlands, which were named Palliſer's Iſlands, their middle being in 15° 36′ S. and 146° 30′ W.

21. Saw the iſland Taheitee the ſecond time.

Anchored at Matavaï Bay.

MAY.

14. Sailed from Taheitee.

15. In the afternoon we anchored at Huahine, in Wharrè-harbour.

23. Sailed from Huahine towards Raietea.

24. Anchored in Hamaneno harbour.

JUNE.

4. Sailed from the Society Iſlands.

6. Paſſed by Howe's Iſland, or Mopeehàh, in 16° 46′ S. and 154° 8′ W.

16. Paſſed a low iſland, unknown before, in 18° 4′ S. and 163° 10′ W. and called it Palmerſtone's Iſland.

20. Saw an iſland in 19° 1′ S. and 169° 37′ W.

21. Landed upon it, and left it, calling it Savage Iſland.

25. Saw ſome of the iſlands belonging to the Archipelago of Namocka.

26. Anchored on the lee-ſide of Namocka, (Rotterdam Iſland of Taſman) which is about 5 leagues in circuit, ſituated in 20° 17′ S. and 174° 32′ W.

29. Set ſail from Namocka, and paſſed by the Friendly Iſlands adjacent.

30. Paſſed through the ſtrait between two high iſlands of ſmall ſize, one called O-Ghào, and the other Tofoòa. The latter has a volcano, and lies in 19° 45′ S. and 174° 48′ W.

JULY.

2. Saw an iſland, and ſtood towards it.

3. Paſſed by it, finding no anchorage, and called it Turtle Iſland. It lies in 19° 48′ S. and 178° 2′ W.

16. Saw

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JULY. 1774.

16. Saw the iſlands of Whitſuntide and Aurora, diſcovered by Capt. Quiros, and viſited by M. de Bougainville.

18. Paſſed between M. de Bougainville's Pic de l'Averdi (or Pic de l'Etoile) and Aurora Iſland, The latter is about 12 leagues long, and 4 or 5 miles broad. Its middle lies nearly in 15° 96′ S. and 168° 24′ E. Came in ſight of the Iſle of Lepers, ſo called by M. de Bougainville.

20. Paſſed between the Iſle of Lepers and Aurora, towards Whitſuntide Iſland. The Iſle of Lepers is found to be about 20 leagues in circuit, its middle lying in 15° 20′ S. and 168° 03′ E. Whitſuntide Iſland is about 12 leagues long, and about 6 miles broad, in the broadeſt part; the middle in 15° 45′ S. and 168° 28′ E.

21. Saw an iſland to the South of Whitſuntide Iſland, which (as we afterwards learnt) the natives call Ambrrym. Its extent E. and W. or thereabouts is 7 leagues, and its circuit near 20. Its middle lies in 16° 15′ S. and 168° 20′ E.

Soon after diſcovered another iſland to the Weſt, of conſiderable extent, named Mallicollo, two others to the S. E. named Pa-oom and Apee, and another to the South, which was called Three-Hills Iſle. In the afternoon anchored in Port Sandwich, on the iſle of Mallicollo.

23. Sailed from Mallicollo, in the morning. This iſland lies about N. N. W. and S. S. E. 20 leagues long, and about 55 in circuit. Its North point is in 15° 50′ S. and 167° 23′ E. and Port Sandwich near the S. E. end, is in 16° 28′ S. and 167° 56′ E.

Left the Iſle of Pa-oom to the N. E. of us in the afternoon; we remained dubious whether it does not conſiſt of two iſlands, of which the Eaſternmoſt is a high peak, ſituated in 16° 25′ S. and 168° 30′ E. The whole circumference of the iſland does not exceed 5 leagues. The iſland of Apee, a little to the Southward of it, is about 7 leagues long, and its middle is in 16° 42′ S. and 168° 36′ E.

24. In the morning ran cloſe up to the Three-Hills Iſland, which is not above two leagues long, and lies in 17° 04′ S. and 168° 32′ E.

In the afternoon examined ſome ſmall iſles off the S. E. end of Apee, which were called Shepherd's Iſles.

25. Paſſed by a ſmall iſland, which we called Two-Hills Iſland, to the South of Three-Hills, and ſaw a rock near it, which received the name of the Monument. In the evening we were becalmed near a large iſland, which we had diſcovered the day before.

26. Paſſed the new iſland in the afternoon, and called it Sandwich Iſland. Its middle is in 17° 45′ S. and 168° 30′ E. It lies nearly S. E. and N. W. and may meaſure 25 leagues in circuit. Two ſmall iſlands, one to the Eaſt, the other to the North of it, were called Montagu and Hinchingbrook.

27. At day-break we diſcovered another new iſland to the S. S. E.

28. Diſcovered another ſtill more to the S. E. and a great way further off.

AUGUST.

1. Ran along the Weſtern ſhore of the iſland diſcovered on the 27th, where we ſaw a harbour.

3. Anchored

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1774. AUGUST.

3. Anchored on the North ſide of this iſland, of which the middle lies in 18° 48′ S. and 169° 20′ E. Its circumference appears to be above 30 leagues.

4. Sailed from this iſland, which (as we afterwards learnt) the natives call Irromanga, and advanced towards the more Southerly one.

5. Anchored in a port on the new iſland, which has a volcano. The natives call their iſland Tanna; it lies in 19° 30′ S. and 169° 38′ E. Its circuit appears to be about 24 leagues.

20. Sailed from Tanna. A ſmall low iſland, named Immer, lies a few leagues to the North of it; a high iſland, called Irronàn, lies about 12 leagues to the Eaſtward of it; and another, called Anattom, to the South-Eaſtward. This laſt is ſituated in 20° 3′ S. and 170° 5′ E. We ſtood to the North Weſtward, along the lee-ſide of the cluſter of iſles we had hitherto diſcovered, which were named the New Hebrides.

24. Having coaſted the W. ſhore of Mallicollo, we ſailed round its North point, through a paſſage already diſcovered by M. de Bougainville, and formed by another great iſland to the Northward, near which we ſaw ſeveral ſmall iſles, along the S. and E. coaſts.

25. We entered a vaſt bay about 8 leagues deep, on the North end of the great iſland. It appeared to Captain Cook to be the ſame which Capt. Quiros has dedicated to St. Philip and St. James. Its Weſt point, which we called Cape Cumberland, lies in 14° 38′ S. and 166° 52′ E. and the Eaſt point, named Cape Quiros, in 14° 55′ S. and 167° 14′ E.

27. Sailed out of the bay of St. Philip and St. James, on Quiros's Tierra del Eſpiritù Santo.

31. Left the Tierra del Eſpiritù Santo, after coaſting its Weſtern ſhore, down to Bougainville's Paſſage. The S. W. point of the land, or Cape Liſburne, lies in 15° 35′ S. and 167° E.

SEPTEMBER.

4. Diſcovered a very extenſive tract of land, to which we gave the name of New Caledonia.

5. Came to an anchor in a harbour on the North ſhore. A ſmall iſland in the harbour, which we called Obſervatory Iſland, lies in 20° 15′ S. and 164° 40′ E.

13. Sailed out of the harbour to the North Weſtward along the ſhore. The point we firſt fell in with or Cape Collnet, lies in 20° 30′ S. and 165° 02′ E.
An iſland to the Weſtward, which the natives call Balabéa, about 12 miles in circuit, lies in 20° 06′ S. and 164° 18′ E.

16. The Northernmoſt land, which looked like broken iſlands, lies nearly in 19° 37′ S. and 163° 40′ E. We ſailed to the South Eaſtward again along the coaſt.

24. Saw the Eaſternmoſt extremity of New Caledonia, which we called Queen Charlotte's Foreland, in 22° 15′ S. and 167° 15′ E. In the evening diſcovered another iſland, which we called the Iſle of Pines. It is 15 or 18 leagues in circuit, and lies in 22° 40′ S. and 167° 40′ E.

29. Came to an anchor under a ſmall iſle, which Capt. Cook called Botany Iſland, in 22° 28′ S. and 167° 16′ E. The Southernmoſt point of New Caledonia, which we called the Prince of Wales's Foreland lies in 22° 30′ S. and 166° 58′ E.

OCTOBER.

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OCTOBER. 1774.

1. Cleared the reefs of New Caledonia at day break, and ſailed to the Southward.
10. Diſcovered a ſmall iſland, on which we landed in the afternoon, and which we left in the evening. It was named Norfolk Iſland, and lies in 29° 2½′ S. and 168° 16′ E.
16. In the evening ſaw the Coaſt of New Zeeland, near Mount Egmont.
18. Anchored in Ship Cove, Queen Charlotte's Sound, the third time. This harbour is ſituated in 41° 6′ S. 174° 25′ 30″ E.

NOVEMBER.

10. Sailed from Queen Charlotte's ſound.

DECEMBER.

18. Made the coaſt of Tierra del Fuego near Cape Deſeado, ſoon after midnight.
20. Anchored in a ſpacious Sound, which we called Chriſtmas Sound.
28. Set ſail from Chriſtmas Sound. The Weſt point of its entrance called York Minſter, lies in 55° 30′ S. and 70° 28′ W.
29. Paſſed Cape Horn in the morning, and found it ſituated in 55° 58′ S. and 67° 46′ W.
31. Anchored under ſome ſmall iſlands on the North ſide of Staten Land, after paſſing Strait le Maire. We called theſe iſles New Year's Iſlands, ſituated in 54° 46′ S. 64° 30′ W.

JANUARY. 1775.

3. At day break ſailed to the Southward.
14. Saw land in the morning at a vaſt diſtance.
16. Paſſed between two little iſlands at the N.W. end of this land. The paſſage was not above a league acroſs. The Southernmoſt was named Bird Iſland, the Northernmoſt, or Willis's Iſland, lies in 54° S. and 38° 25′ W.
17. Landed in a bay, which we called Poſſeſſion Bay, in 54° 15′ S. and 37° 15′ W.
19. Reached the S. E. end of the new land, which was called the Iſle of Georgia. A ſmall iſland at the S. end lies in 54° 52′ S. and 35° 50′ W. and was called Cooper's Iſland. Some rocks to the South Eaſtward about 15 leagues off were called Clerke's rocks, and lie in 55° S. and 34° 50′ W.
23. Very near being loſt upon Clerke's rocks.
28. Having croſſed 60° S. we were ſtopped by field-ice.
31. At ſeven o'clock ſaw very high land cloſe to us, through the fog.

FEBRUARY.

2. Saw the Northernmoſt parts of this land, which was named Sandwich Land. Its Southernmoſt extreme, or Southern Thule, lies in 59° 30′ S. and 27° 30′ W. The point which we firſt fell in with, or Freezeland Peak, in 58° 55′ S. and 27° W. A ſinuoſity of the coaſt between Thule and Freezeland's Peak was called Forſter's Bay. An iſland called Saunder's Iſland, in 57° 48′ S. and 26° 35′ W. and two other iſlands, called Candlemas Iſlands, in 57° 10′ S. and 27° 6′ W.
18. Paſſed over the place, where M. des Loziers Bouvet, ſuppoſed to have ſeen land, which he called Cape Circumciſion.
23. Paſſed over the ſpot, where we had ſeen field-ice in December, 1772.

MARCH.

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1775. MARCH.
18. Made the coaſt of Africa, near Moſſel-Bay.
22. Anchored in Table-Bay, at the Cape of Good Hope.
APRIL.
27. Sailed from the Cape.
MAY.
15. Saw the iſland of St. Helena, and anchored about midnight in James's Bay.
21. Set ſail in company with the Dutton Indiaman.
28. Saw Aſcenſion Iſland, and anchored in Croſs Bay.
31. In the afternoon we ſailed from Aſcenſion.
JUNE.
9. We ſaw and paſſed the iſle of Fernando Noronha.
JULY.
13. Saw the Azores, or Weſtern Iſlands.
14. Anchored in Fayal Road.
19. At day-break ſet ſail from Fayal.
20. Left the Azores,
29. Paſſed the Lizard; ſaw the Start, and Eddiſtone.
30. Anchored at Spithead.

THE

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OBSERVATIONS

DURING A

VOYAGE

ROUND THE WORLD.

INTER CRIMINA INGRATI ANIMI ET HOC DUXERIM, QUOD NATURAM EJUS (TERRÆ) IGNORAMUS.

PLIN. Hiſt. Nat. Lib. 2. C. 64.

CHAP. I.

Remarks on the Earth and Lands; their Inequalities, Strata, and conſtituent Parts.

SECT. I.

LARGE LANDS.

LANDS.

THE globe of the earth contains, as far as we know, three large maſſes of land. In the Eaſtern hemiſphere we find firſt that maſs, which is commonly called the *Old World*, and which comprehends three large parts, bearing the appellation of Continents, and diſtinguiſhed by the names of *Europe*, *Aſia*, and *Africa*. The next in ſize, and in the order of time, when it was made known to European nations, is ſituated in the Weſtern hemiſphere,

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LANDS. and called *America*. The third large maſs of land lies in the South-Eaſt part of our hemiſphere, and its Eaſtern limits have been but lately aſcertained by that indefatigable and intelligent navigator, Capt. *Cook*, in the year 1770. Its Weſtern and Northern limits were firſt diſcovered in 1616 and the following years, by the Dutch navigators, when a noble ſpirit of diſcovery ſtill animated the governors of their Indian ſettlements. Since that time it has been viſited, and ſeverally ſeen, by Dutch and Engliſh navigators, and the whole was called in 1644 *New-Holland*, from its firſt diſcoverers. Perhaps many will diſſent from me, and refuſe to call it a *Continent*, though it be little, if at all, inferior to Europe, to which no one has hitherto heſitated to give that name. It muſt be allowed, that New-Holland is at preſent the moſt backward of all the lands called Continents, in point of population, and utility to Europe; but this objection is of little weight, ſince it may perhaps, in future ages, become as populous as any of the other continents, and equally uſeful; as I believe it to be very likely to ſupply the wants of European colonies.

We know this land but imperfectly, and all our navigators ſeem to complain that it is deficient in freſh water and large rivers; but, had they properly and carefully examined its circuit, eſpecially its South-Weſtern ſhores, their enquiries would perhaps have been rewarded with ſucceſs; for it is highly probable, that a land of ſo great

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great extent contains high mountains in its interior parts; and wherever thoſe are, there muſt be rivers. Theſe would invite European ſettlers; eſpecially ſuch as would be willing to withdraw themſelves from the oppreſſions of growing deſpotiſm in Europe. To ſuch ſons of liberty this continent would offer a new and happy aſylum: by which means it might become the ſeat of ſciences and arts; happy in its cultivation, the riches of its productions, and the number of its inhabitants. LANDS.

The reſt of the lands, not comprehended under thoſe now enumerated, are only iſlands. In our voyage we touched at the Cape of Good Hope in Africa: we ſaw only the laſt fragments of America along the coaſt of Tierra del Fuego, and beſides theſe, our own continent from which we came, and to which we again returned. We have therefore nothing to ſay in particular relative to large lands, if we except a ſingle remark, which we collected from the accounts of our friends on board the Adventure, who ſaw part of New-Holland in 1773. The Southernmoſt extremity of this continent has a great ſimilarity to all the Southern points and extremities of continents, and therefore appears black, rocky, and of conſiderable * elevation; though farther to the North, the country is even, and without any remarkably high hills, at leaſt near the ſhores.

* The Cape of Good Hope preſents a high, bleak, and rocky point. Cape Comorin in India, and Cape Froward in America, are both of the ſame nature.

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LANDS. I pretend not to defend any particular hypotheſis relative to the theory of the earth; but, if we caſt our eyes on the two hemiſpheres of our globe, ſuch as they are known ſince our laſt voyage, they ſeem to offer ſome curious particulars to our view.

All the remarkable Southern-points of lands on our globe, have a great and ſtriking ſimilarity in regard to their conformation, and the ſituation of iſlands in their vicinity. They are all high and rocky; each ſeems to be the extremity of a range of high mountains running northward. All have to the eaſtward one or more large iſlands. Nay, if we continue the compariſon, all continents have a great ſinuoſity on the weſt-ſide towards the north. So many coinciding circumſtances ſeem, not to be merely accidental, but rather to proceed from one and the ſame general cauſe. I do not pretend to point out this firſt cauſe, but cannot help ſuſpecting, that a violent flood coming from the ſouth-weſt has produced this ſtriking identity of conformation in theſe lands, though I can neither point out the time when this great revolution happened, nor aſſign any reaſon for its operating in this manner. It ſuffices to have mentioned the fact, and hinted at the next cauſe, without any oſtentation.

America has the Andes running from the South to the North, and ending in Cape Froward, nay, extending even beyond the ſtreight to Cape Horn. The ſinuoſity on its Weſt-ſide is evident about

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about the tropic of Capricorn, and to the Eaſt of its South-point are Tierra del Fuego, Staten Land, and the Falkland Iſlands. LANDS.

Africa, on its Weſt coaſt, has a great ſinuoſity to the North of the Line. The high rocks of its Southern extremity at the Cape of Good Hope are continued by a long range of high mountains running in the direction of North Eaſt from the Cape. Madagaſcar, and ſeveral ſmall iſlands, are to the Eaſt or North-Eaſt of its Southern extremity.

Aſia terminates at Cape Comorin in a high, rocky point, formed by the extremity of a chain of the mountains of Gatte: beyond *Cambaya*, towards the river *Sind*, there is a ſinuoſity ſimilar to thoſe already mentioned; and on the Eaſt-ſide of Cape Comorin is the iſland of Ceylon.

New-Holland has a high rocky point on its Southern extremity, which, according to the accounts of Taſman and our laſt navigators, ſeems to be continued in a ſeries of mountains extending a good way up to the North. Whoſoever caſts a glance on Africa and New-Holland, muſt, upon the whole, be ſtruck with the ſimilarity of their general outlines; the ſinuoſity to the Weſt being very remarkable in both: and Eaſtward of New-Holland are the two large iſlands, which form New-Zeeland.

SECT.

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SECT. II. ISLANDS.

ISLANDS. ALL the iſlands which we ſaw during our voyage are either ſituated within the tropicks, or in the temperate zones. The Tropical Iſlands may be again divided into high and low.

The high Tropical Iſlands are either ſurrounded by reefs, and have flats near the ſea-ſhore, or they are without reefs. Of the firſt kind are O-Taheitee with all the Society Iſles and Maatea, the higher Friendly Iſles Tongatabu, Eaoowe, Namocka, Turtle Iſland and new Caledonia.

Amongſt the higheſt Tropical Iſles without a reef, we reckon the Marqueſas and all the new Hebrides, together with Savage Iſland; and Tofooa and Oghao among the Friendly Iſles.

The Low Iſles of which we have any knowledge, are Chain-Iſland and four other iſles, which were perhaps ſeen by Mr. De Bougainville; alſo Tethuroa, Teoukea with four more called Palliſer's Iſles, Tupai, Mopeeha or Howe's Iſles; Palmerſtone's Iſles, with the Immer, one of the new Hebrides, and the Archipelago of the Low Friendly Iſlands.

Theſe iſles are ſo different from each other in their nature, that we cannot help at firſt ſight obſerving the ſtriking and material difference. The Low Iſles are commonly narrow, low ledges of coral rocks, including in the middle a kind of lagoon and having here and there little ſandy ſpots ſomewhat elevated above high-wa-

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ter mark, whereon coco nuts and a few other plants will thrive: the reſt of the ledge of rocks is ſo low, that the ſea frequently flows over it at high and ſometimes at low water. Several of the larger iſles of this kind are regularly inhabited; ſome are only reſorted to, now and then by the inhabitants of the neighbouring high iſles, for the purpoſes of fiſhing, fowling and turtling; and ſome others are abſolutely uninhabited, though they are furniſhed with coco nut-trees and are often reſorted to in great flocks by man of war birds, boobies, gulls, terns and ſome petrels. ISLANDS.

The high iſlands of both kinds appear at a diſtance, like large hills in the midſt of the ocean, and ſome of them are greatly elevated, ſo that their ſummits are ſeldom free from clouds. Thoſe, which are ſurrounded by a reef and by a fertile plain, along the ſea-ſhores, have commonly a more gentle ſlope; whereas the others are ſuddenly ſteep. It muſt be allowed, however, that the hills in ſome of the new Hebrides *viz.* Ambrym, Sandwich Iſle, Tanna and others have likewiſe in ſeveral places an eaſy aſcent.

The iſlands ſeen by us in the South Sea in the temperate Southern zone, are Eaſter Iſland, Norfolk Iſland, and new Zeeland, and theſe are all high, and have no reef ſurrounding them. Norfolk Iſland is however ſituated upon a bank extending more than ten or twelve miles round it. New Zeeland as far as we had an opportunity of examining it, conſiſts of very high hills, of which ſome in the very interior parts have ſummits almoſt always involved in clouds,

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ISLANDS. or when free, ſhewing their ſnowy heads at more than twenty or thirty leagues diſtance. The lower hills of the ſame iſlands are almoſt every where covered with woods and foreſts, and none but the higher ſummits appear to be barren.

Tierra del Fuego as far as we could diſcover, appears to be a cluſter of iſles interſected by various deep ſounds and channels. The land conſiſts of craggy, bleak and ſteep rocks, whoſe ſummits are covered with eternal ſnow, eſpecially in thoſe interior parts which are leſs expoſed to the mild and humid air of the ſea. Its Eaſternmoſt ſide about the ſtreights le Maire, has an eaſy ſlope, and is in ſome parts wooded. Staten Land has the ſame appearance as the barren part of Tierra del Fuego: nor was the ſnow wanting in the beginning of January or the very height of ſummer.

Southern Georgia is an iſle of about eighty leagues in extent, conſiſting of high hills, none of which were free from ſnow in the middle of January, except a few rocks towards the ſea: and the bottoms of all its harbours we found filled with ice.

The laſt land we ſaw in theſe cold, diſmal regions we called *Sandwich Land*, and the Southernmoſt part of it, *Southern Thule*. All this land or cluſter of iſles, is full of ice and entirely covered with ſnow.

——Pigris ubi nulla campis
Arbor æſtiva recreatur aura:
Quod latus mundi, nebulæ, maluſque
Jupiter urget. HOR. lib. 1. Od. XXII.

SECT.

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SECTION III.

STRATA.

NO ſoil appears on SOUTHERN GEORGIA, except in a few crevices of the rocks; all the reſt is a ponderous ſlate which contains ſome irony particles, lies in horizontal ſtrata or nearly ſo, and is here and there perpendicularly interſected by veins of quartz. STRATA.

The rocks of *Tierra del Fuego* near the ſea, are of the ſame nature and have on the higher parts, coarſe granite rocks. *(Saxum)*

The Southern iſle of NEW ZEELAND which we viſited in two different places, is on its ſurface covered with a ſtratum of fine black light mould, formed of putrified moſſes, deciduous leaves, and rotten trees (*humus dædalea & ruralis*, Linnæi.) This ſtratum is in ſome places about ten or twelve inches thick, but in general not ſo deep; under it we found an argillaceous ſubſtance nearly related to the claſs of talcous ſtones, which is turned into a kind of earth, by being expoſed to the action of the ſun, air, rain and froſt, and is of various thickneſs: ſtill deeper the ſame is indurated into ſtone, running in oblique ſtrata dipping generally to the South: their hardneſs varies conſiderably, for ſome of the moſt indurated and compact will ſtrike fire with ſteel. Their colour is generally a pale yellow, ſome-

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STRATA. times with a greeniſh hue. Theſe ſtrata are interſected perpendicularly or nearly ſo, by veins of white quartz (*quarzum lacteum* Linn.) and ſometimes contain a green kind of ſtone of a lamellated ſtructure, and nearly related to the talcous ſtones. On ſhingly beaches I have, though ſeldom, found a few black ſmooth ſtones of the flinty order, and ſome large detached pieces of a ſolid, ponderous, ſpeckled grey or blackiſh green lava, employed by the natives to form their emittees, or weapons for cloſe engagement. A few pumice-ſtones (*pumex vulcani* Linn.) were likewiſe collected on the ſhingly beaches of this iſle: but whether they were thrown up by a volcano in the neighbourhood, or carried there from remote parts by the ſea, I cannot determine. Among the foſſil productions of this country, we muſt likewiſe reckon a green ſtone, which ſometimes is opaque, and ſometimes quite tranſparent, manufactured by the natives into hatchets, chiſſels, and ornaments, and ſeems to be of the nephritic kind (*talcum nephriticum* Linn.) This ſtone is commonly brought by the natives from the interior parts of Queen Charlotte's Sound to the South Weſt, in which direction they pointed. We aſked for its native place, and they called it *Poënamoo*, from whence probably the abovementioned part of the country obtained the denomination of Tavai Poënamoo: but next to *Motoo-aroo*, on the little iſlet, where the natives formerly had one of their hippa's or ſtrong holds, this ſtone is found in perpendicular or ſomewhat oblique veins,

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of about two inches thickneſs, in the above-mentioned ſtrata of talcous greyiſh ſtone. The nephritic is ſeldom ſolid or in large pieces, for the greateſt fragments we ſaw, never exceeded twelve or fifteen inches in breadth, and about two inches in thickneſs. On the ſhores we commonly met with a blueiſh grey, argillaceous ſlate of a lamellated ſtructure, eaſily crumbling to pieces, when expoſed to the weather: ſometimes this ſlate is more ſolid, ponderous, and of a darker colour, probably on account of ſome metallic irony particles, which I ſuppoſe it to contain. The fragments of this ſlate ſcattered on the beach our ſeamen call *ſhingle*. We found in NORFOLK ISLAND almoſt the ſame ſtrata as in New Zeeland, and alſo red and yellow fragments of a ſpungy lava: this iſland likewiſe contains the ſame plants and birds. STRATA.

EASTER ISLAND has ſtrongly the appearance of a land that has lately undergone a great alteration by fire. All its rocks look black, burnt and cavernous, reſembling ſlags or droſs. The ſoil is a reddiſh brown, duſty mould, as if it had been burnt, and might with juſtice be deemed a kind of *Puzzolana*, * ſpread with innumerable fragments of *tarras ſtone*, ſome rocks which I ſaw were of a brown or reddiſh ochreous volcanic tufa, † (*tophus tubalcaini* Linn.) full of caverns, and ſome ferrugineous particles. Of this ſubſtance the

* See *Ferber's travels through Italy*, tranſlated by Mr. Raſpe, p. 130.
† See *Ferber's travels* p. 128.

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STRATA. gigantic ſtatues of Eaſter Iſland are formed, and therefore they cannot be of very remote antiquity, as the ſtone is of an extremely periſhable nature. On the South ſide of the iſle, the whole cliff towards the ſea for more than a quarter of a mile conſiſts of ſolid ponderous rock of a honeycombed ſlag or lava, which may be expected to yield ſome portions of iron. Beſides theſe, we ſaw ſeveral black glaſſy ſtones, which to mineralogiſts are known by the name of black agate (*pumex vitreus* Linn.) found in Iceland, ‡ near the Veſuvio in Italy, § the Mongibello in Sicily, and on the iſle of Aſcenſion; ‖ in ſhort in all the neighbourhoods of volcanos. We obſerved likewiſe a ſtony, light, ſpungy kind of lava, of a whitiſh grey colour.

THE MARQUESAS have a rocky ſhore, conſiſting of indurated clay; a ponderous, ſolid ſlate, of a blueiſh grey colour, containing ſome iron particles; and laſtly, a ſtony lava, which is either grey, ſpungy with lamellated, vitreous, pentagonal or hexagonal ſherl, of a browniſh and in ſome of a greeniſh, or of a blackiſh colour, with browniſh and ſometimes white ſtarlike or radiated ſherl. The ſurface of the ſoil is a clay mixed with mould, which the natives manure with ſhells. Under this mould is an earthy argillaceous ſubſtance, mixed with tarras and puzzolana. As we ſtaid but a few days here, we had not much time to examine the higher parts of the iſle.

O-Taheitee

‡ *Ferber's travels*, p. 158. Mr. Raſpe's note.
§ *Ferber's travels*, p. 157.
‖ Cronſted's mineralogy, ſect. 295. p. 269.

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O-Taheitee and all the *Society Iſles* are no doubt of the ſame na- STRATA.
ture. Their ſhores are coral rock extending from the reef encircling theſe iſles to the very high-water mark. There begins the ſand, formed in ſome places from ſmall ſhells, and rubbed pieces of coral rock; but in others the ſhores are covered by a blackiſh kind of ſand, conſiſting of the former ſort mixed with black, ſometimes ſhining and glittering particles of coarſe daze or gliſt *(Mica)* and here and there ſome particles of refractory iron ores called in England SHIM *(ferrum micaceum*, Linn.) and KALL *(molybdænum ſpuma lupi*, Linn.) The plains from the ſhores to the foot of the hills, are covered with a very fine thick ſtratum of black mould, mixed with the above-mentioned kind of ſand, and when the natives cultivate ſome ſpots for raiſing the inebriating pepper plant *(piper methyſticum)* or the cloth plant *(morus papyrifera)* they often uſe ſhells as a kind of manure. The firſt and lower range of hills are commonly formed of a red ochreous earth *(ochra martis* Linn.) ſometimes ſo intenſely red, that the natives uſe it to paint their canoes and cloth: and in this earth I found here and there pieces, as I believe of the oſteocolla *(tophus oſteocolla* Linn.) The higher hills conſiſt of a hard, compact, and ſtiff clayey ſubſtance, which in the ſtrata that are out of the reach of ſun, air and rain, are hardened into a ſtone. There are at the top of the valleys, along the banks of the rivers, large maſſes of coarſe granite ſtones *(ſaxum)* of various mixtures, and at a place

of

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STRATA. of the ſame nature, near a caſcade formed by the river *Matavai*, there are pillars of a grey, ſolid baſaltes, (*nitrum baſaltinum* Linn.) and here and there I ſaw fragments of black ſolid baſaltes or paragone, which the natives commonly employ to make their paſte beaters, hatchets, chiſſels and cutting tools. At *O-Aite-peha* the natives brought me on board a kind of pyrites having the exact form of a ſtalactite, or of a ſubſtance that had been melted and congealed while running down. The exiſtence of ſulphureous pyrites confirms the account I was favoured with by the learned and ingenious Dr. Caſimiro Gomez Ortega, F.R.S. the King of Spain's Botaniſt, and Intendant of the botanical garden at Madrid, intimating that the Spaniſh men of war, which had been at O-Taheitee, brought from thence a large maſs of the fineſt cryſtalline tranſparent native ſulphur, now placed in the royal cabinet of natural hiſtory at Madrid. At the top of the numerous valleys, which interſect theſe iſles, are large, rocky maſſes, black and cavernous, full of various white and other ſpecks of ſherl, in a word, real lava. There is likewiſe a grey, ſtalactitic, porous lava to be met with, which contains black ſherls; and laſtly we found an argillaceous, lamellated iron ſtone of a dull reddiſh brown colour.

The FRIENDLY ISLANDS have, in my opinion, the ſame ſoil as the Society Iſles; with this difference only, that they are not ſo high or ſo rocky as the latter. When we came to *A-Namocka* in the

the year 1774, we saw on the isle of Tofoòa a smoke in the morning, STRATA.
which appeared fiery at night. When we passed between it and O-Ghào, we observed great clouds of smoke rising from the middle of the isle, attended with a smell similar to that produced by burnt turf; some particles filled the atmosphere, and fell down on the ship, and coming in contact with the eye, occasioned an acute pain. On the North side of the isle we saw a large place with the evident appearance of being lately burnt by fire. On the shores of A-Namocka, pumice-stones were frequently thrown up by the sea. The natives of all these isles used likewise pieces of black, solid besaltes for hatchets and tools, as in the Society Isles. Among the fishing implements of these islanders, we found conic pieces of a calcareous stone; but we could not determine whether they were made of spar, or of coral-rock: though I am inclined to believe these cones to be a kind of sparry substance.

The soil of the NEW-HEBRIDES seems to be very much of the same kind with that in the above islands.

At MALLICOLLO, it appeared to consist rather of a yellowish clay, mixed with common sand. The rocks along the sea-shore, are formed of corals and madrepores; and higher up of an indurated clay. The isle of AMBRRYM has certainly one, if not two, volcanos; and we found pumice-stones on the opposite shores of Mallicollo. IRROMANGA we saw only at a distance, and it seemed to be much

of

STRATA. of the ſame nature with the former iſles. TANNA has on its ſhores coral rocks and madrepores: the beaches are covered with a blackiſh ſand, conſiſting of minute pieces of ſherl and pumice-ſtone, which are formed by the aſhes conſtantly thrown up by a volcano, and ſcattered over the whole ſurface of the iſland. (*Pumex cinerarius*, Linn.) The ſurface of the whole iſle conſiſts therefore of this pumice-ſand mixed with a black mould formed by the putrified vegetables. The pumice-ſand is very abundant; for there is at certain times, ſeveral leagues diſtant from the volcano, not a leaf of any tree or plant, nor any graſs, which is not entirely covered with aſhes, which I examined, and found to be this very pumice-ſand: however, this forms a moſt admirable aſhy, fertile ſoil, in which all vegetables thrive with the greateſt luxuriance. We found a few ſingle detached rock-ſtones; being a mixture of quartz and black daze or mica; nay, one of theſe pieces was a coarſe diſſolved granite, covered with black button-ore, which is a ſort of iron-ore.

The chief ſtrata of the iſle, as far as I could form a judgment of them, from the various cliffs ſurrounding the harbour, are of a clay mixed with aluminous earth, interſperſed with lumps of pure chalk. The ſtrata of the clay are about ſix inches more or leſs, deviating very little from the horizontal line. In a few places I found a ſoft, blackiſh ſand-ſtone, compoſed of the aſhes ſpread by the volcano, and ſome parts of clay. Here and there I obſerved a ſubſtance commonly

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monly called *rotten-ſtone*, which is a brown clayey tripoli; and, between the rotten-ſtone and the above-mentioned ſand-ſtone, is a ſtratum containing both mixed together. High on the ſides of the hills towards the volcano, I found a whitiſh, argillaceous ſubſtance, through which aqueous and ſulphureous ſteams, from the very neighbourhood of the volcano, were continually riſing, and made the place intenſely hot: its taſte is ſtyptic, and I believe aluminous *. Some native ſulphur was to be ſeen in this earth, together with ſeveral green ſpecks or marks of copper. Under theſe ſolfataras, (which, at each eruption from the volcano, emitted greater quantities of hot ſteams) are ſeveral hot wells, cloſe to the high-water mark, which, however, ſeem not to be in the leaſt ſulphureous. I found

STRATA.

* All the neighbourhood of the ſolfataras in Tanna contains volcanic productions. The ſtones near it are lavas; the ſand conſiſts of volcanic aſhes, and the ſoil is clay mixed with this ſand. It is therefore beyond any doubt, that the clayey white ſubſtance, found in the very ſpiraculum, is nothing but a new modification of the volcanic productions. The firſt who ever had this idea, that clays are produced by an operation of the vitriolic acid upon vitreſcent or vitrified ſubſtances, is the ingenious Mr. *Beaumé*, who founded it on a ſeries of experiments. But the very firſt, who applied this idea to the great operations of nature in the ſolfataras, is Mr. *Ferber*, the moſt intelligent, and moſt accurate mineralogical writer of this age, which may be ſeen more at large in his xith letter, dated February 17, 1772, publiſhed in his *Travels through Italy*, tranſlated by Mr. *Raſpe*. Sir William Hamilton, that indefatigable obſerver of volcanos, had already examined the ſolfatara in 1771; but he ſeems, at that time, not to have had the leaſt intimation of this remarkable proceſs; ſince, in his letter to Dr. Maty, dated March 5, 1771, he calls the operation going forward at the ſolfatara a *calcination*: and he mentions to *have ſeen half of a large piece of lava perfectly* CALCINED, *whilſt the other half, out of the reach of the vapours, has been untouched*; *and in ſome pieces, the centre ſeems to be already converted into* TRUE MARBLE. Theſe whitiſh clays *might, even by their appearance*, ſays Mr. Ferber, p. 165, *be miſtaken for lime-ſtone*; no wonder, therefore, that they ſhould ſuggeſt the idea of CALCINATION and of TRUE MARBLE.

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STRATA. found likewiſe, in the vicinity of the hot ſteaming places or ſolfataras, a red ochre, or vitriolic earth, ſimilar to the *colcothar vitrioli*, uſed by the natives for painting their faces. Every where in the iſle we met with pumice-ſtones of purple, black, and white colour, and of different ſpecific gravity. On the South-ſide of the iſle is a cliff, in which I found ſeveral pieces of lava, ſome of which were black and ſolid, others porous and filled with greeniſh and white ſherl cryſtals; others were grey and porous, containing yellow and black ſherl. Beſides theſe, we found a reddiſh lava or tarras, very light and ſimilar to a pumice-ſtone. On the ſhores were calcareous *tophi* to be met with, containing ſeveral *nidi* of *pholades*.

The neighbouring iſle of ANATTOM, I ſuppoſe to contain likewiſe volcanic productions, as well as Tanna, becauſe the natives of the latter had hatchets of black, ſolid baſaltes or paragone, and ſaid they came from *Anattom*, to diſtinguiſh them from hatchets made of a white ſhell, and which came from the iſle of *Immer*: the firſt kind they called *Pahà-bìttaf*, and the latter *Pahà-bùſhan*. To our iron hatchets they gave the firſt name.

NEW-CALEDONIA, and its adjacent iſles, are ſurrounded by a reef of coral rocks and madrepores. The ſhores conſiſt of ſhell-ſand and particles of quartz. The ſoil is, in the plains, a black mould mixed with the above ſand, and when watered and cultivat-

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ed, very fertile. The ſides of the hills, which I viſited, are compoſed of a yellow ochreous clay, richly ſpangled with ſmall particles of cat-ſilver, or a whitiſh kind of daze. (*Mica argentea.* Linn.) The higher parts of the hills conſiſt of a ſtone, called by the German miners *geſtell-ſtein*, compoſed of quartz and great lumps of the above cat-ſilver. (*Saxum quarzo & mica argentea compoſitum.*) The cat-ſilver is ſometimes of an intenſely red or orange colour, by means of an iron-ochre. To the Weſt of our anchoring-place, near the ſhore, are large, extremely hard maſſes of a blackiſh-green horn-ſtone, (*talcum corneum.* Linn.) full of ſmall pieces of garnets, of the ſize of a pin's head. (*Saxum corneum, granatis mixtum.*) In ſeveral places, fragments of white and very tranſparent quartz, ſometimes tinged red in the cracks, are found ſcattered: theſe ſtones the natives contrive to break in ſuch a manner, that a ſharp edge is produced, and uſe them to cut their hair. The natives carry ſtones for their ſlings in ſmall bags. Theſe ſtones are of an oblong roundiſh figure, and pointed at both ends, conſiſting of a kind of ſoap-rock or ſmectites. Beſides theſe, we met with ſome coarſe, fibrous, greeniſh aſbeſtos. STRATA.

If I except the coral rocks and madrepores, which form the ſhores of a great many of theſe iſles, I cannot ſay, that I met with a ſingle petrefaction of any denomination, in all the iſles we viſited in the courſe of our expedition.

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STRATA. From the above account it appears, I think, evidently, that all the tropical high isles of the South-Sea have been subject to the action of volcanos. This is strongly confirmed by the actual ignivomous mountains, which we observed at Tofoòa, Ambrrym, and Tanna.

Pyritical and sulphureous substances, together with a few iron-stones and some vestiges of copper, are no doubt found in several of them: but the mountains of New-Calèdonia are the most likely to contain the richest metallic veins; and the same opinion, I suspect, may be formed of the mountains in New Zeeland. For the metallic substances, in all the other volcanic isles are probably destroyed and scorified by the violence of the subterraneous fire: those in New-Caledonia and New-Zeeland seem to be as yet undisturbed, as the species of fossils prevailing in these two isles are substances, which mineralogists have hitherto looked upon as primogenial, in which all the metallic veins * on our globe are constantly found. We can offer nothing besides this general, but probable, conjecture; as our short stay, and the multiplicity of other business, prevented us from enquiring more minutely into the nature of the fossil productions of these isles.

* I speak of veins only, and not of flatt-work or floors, which contain likewise sometimes metallic ores, but have an origin different from that of the primogenial mountains.

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SECT. IV.

MOUNTAINS.

MOUNTAINS.

IF we examine the isles, visited by us in the different seas, which we navigated, it will appear, that they all ought to be considered as a range of submarine mountains; for, if the bottom of the sea is to be looked upon as land, these isles certainly are elevations or rising grounds; and therefore, as they are so near one another, and lying in the same direction, they can be nothing but chains of mountains. I will at present, therefore, only give an idea of the various ranges of these submarine elevations, which fall under the above description.

When we were at the Cape of Good Hope, in November, 1772, we were informed, that the French had discovered some land in the Southern Indian ocean, about the meridian of Mauritius, and the latitude of 48° South. After having gone beyond the antarctic circle, we hauled up towards the above situation, and found no land; but, from all concurring circumstances, it was highly probable, that we had been at no great distance from it. At our return to the Cape in March, 1775, we found there Capt. Crozet, who had made a voyage on discovery with the unfortunate Capt. Marion, and had

found

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found ſeveral ſmall iſles and a large one, all lying in a direction from Weſt to Eaſt, or nearly ſo: theſe iſles, and thoſe ſeen by Mr. de Kirguelen, are expreſſed in a chart publiſhed under the patronage of the Duc de Croy, by Robert de Vaugondy. Though we had not the good luck to fall in with them, we have, however, no reaſons to diſbelieve their exiſtence; and probably their ſituation will be aſcertained by that able and indefatigable navigator, Capt. Cook, in the expedition in which he at preſent is employed. Theſe iſles ſeem to be a ſeries or chain of ſubmarine mountains, running nearly from Weſt to Eaſt. The lands, viſited by us and others, in the Southern parts of the Atlantic ocean, are Sandwich Land, South-Georgia, Falkland Iſlands, and Staten Land, together with the broken lands belonging to Tierra del Fuego, and theſe form another chain of ſubmarine mountains, lying almoſt in the ſame direction with the former. The low iſles to the Eaſt of O-Taheitee, with the Society Iſles, the Friendly Iſles, the New-Hebrides, and New-Caledonia, together with the intermediate iſles of Scilly, Howe, Palliſer, Palmerſtone, Savage, and Turtle-Iſland, as well as the iſles of Hope and Cocos, Capt. Carteret's Queen Charlotte's-Iſles, and ſeveral more, as far as New-Hibernia, New-Britain, and New-Guinea, are one great chain of ſubmarine mountains; extending through an immenſe ſpace, or three-fourths of the whole South-Sea.

Nor-

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Norfolk-Iſland, and New-Zeeland, ſeem to belong to a range of mountains branching out from the great chain, and running from North to South. If we conſider this direction of iſles or ſubmarine mountains, it ſhould ſeem they were deſigned to give greater ſolidity and ſtrength to the compages of our globe. MOUNTAINS.

The next circumſtance relative to the mountains is their HEIGHT. The higheſt of all the mountains, which we ſaw in the courſe of this voyage, is, in my opinion, Mount Egmont, on the Northern iſle of New-Zeeland, whoſe ſummit was covered with ſnow a great way down, and almoſt conſtantly capt with clouds; though at intervals we ſaw its top very diſtinctly.

In France, in about 46° of North latitude, the line of eternal ſnow is found at the height of about 3280 or 3400 yards above the level of the ſea. On the Pico de Teyde, on the iſle of Teneriffe, in about 28° of North latitude, the ſnow is to be met with at the height of 4472 yards. Mount Egmont is very nearly in 39° of South latitude: but, as we conſtantly found, that in Southern latitudes the cold is much more intenſe than in the correſponding degrees of the Northern hemiſphere, I will ſuppoſe the climate of Mount Egmont equal to that of France, and therefore the line of ſnow to be at the height of 3280 yards; and, as the ſnow ſeemed to occupy one third of its height, the mountain will be 4920 yards high, or 14,760 feet, which is ſomewhat leſs than Dr. Heberden found

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found the Pico of the isle of Teneriffe* to be. The summits of the other mountains, in the interior parts of New-Zeeland, both in Queen Charlotte's Sound and in Dusky Bay we found constantly covered a good way down with eternal snow.

We observed these snow capt heads all the way along, when we sailed from Dusky Bay to Queen Charlotte's Sound in May, in the year 1773, and we took notice of the same circumstance in the same year in October, on the other side of the Southern isle, when contrary storms brought us a good way along its South East shore, almost as far as Banks's Island. This I believe, sufficiently proves, that these mountains form, as it were, one continued chain, running throughout the whole Southern Isle, and that they are little inferior in height to twelve or fourteen thousand feet. This long series of mountains, running in the same direction, gives room for a probable conjecture, that the metallic veins, which in all likelihood are to be met with in the mountains of New Zeeland, are of a very rich and valuable nature.

The

* The Chevalier DE BORDA has in August, 1776, measured the height of the Peak of Teneriffe, and found it to be 1931 French toises = 12,340 English feet, and very near the same quantity he obtained by trigonometrical measurement. Dr. Heberden's operations gave 15,396 English feet as the height of the Peak of Teneriffe. *Phil. Trans.* vol. xlvii. p. 356. The same Dr. Heberden remarks there, that the *Sugar-loaf*, or *la Pericosa*, is *an eighth part of a league to the top*, and that it is *covered with snow the greatest part of the year*. Deducting, therefore, 1980 feet = to one eighth part of a league, from 15,396 feet, the total for the height of the Peak according to Dr. Heberden, there remain 13,416 feet = 4472 yards, to the line of snow. Or, if these 1980 feet be deducted from 12,340, or the height according to the Chev. BORDA, there remain 10,360 feet = 3453 yards, as the line of snow in about 28° and some odd minutes North latitude.

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MOUNTAINS.

The hills of *Tierra del Fuego*, *Staten Land*, *South Georgia*, and *Sandwich Land* are conſtantly covered with ſnow; however, in the two firſt only the ſummits of the hills had ſnow, but in the latter the ſnow and ice reached in moſt places to the very edge of the ſea, in the midſt of their ſummer; which certainly proves the extreme rigour of the climate, as the line of eternal ſnow comes down ſo low. What is ſtill more remarkable, this happened in iſles ſurrounded by the moiſt and therefore mild ſea air, which undoubtedly weakens the intenſeneſs of the froſt, and commonly mitigates the rigour of the climate.

The mountain in the middle of the great peninſula of O-Taheitee or of Tobreonoo, is as far as I can form any idea, the higheſt of all the mountai... ... the Tropical Iſles: it is in ſome places of an eaſy and gentle ſlope, and interſected by numerous and very deep valleys, converging towards the middle of the iſle, where its ſummits are to be met with. The higheſt point of this hill is at a very juſt eſtimate, about ſeven miles from Point Venus. According to Captain Cook's map, it ſeems to be nine miles diſtant from thence; but as I have been twice up to this hill, I rather think the diſtance in the map to be too great; and the more ſo, as the valley, wherein Matavai-river runs, ſcarcely extends at its very extremity to more than ſix miles, and this valley is almoſt at the ſame diſtance from the ſea, with the higheſt part of the hill. Mr. Wales our Aſtronomer

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took from his obſervatory on Point Venus the height of the hill, by the aſtronomical quadrants, and found it to be exactly 15° above the level of the ſea; for the obſervatory is but a few feet above that level. If we allow theſe premiſes to be right, it will follow from a trigonometrical calculation, that this hill is 9565 feet high *.

The little Peninſula of O-Taheitee or Téarraboo, has likewiſe hills towards its centre, but their ſummits are ſo ſteep, ſo craggy and ſo like ſpires in ſome inſtances, that the ſight of theſe convinces the beholder, that they have undergone a great convulſion from violent cauſes, and eſpecially ſubterraneous fire. The hills in all the other Tropical Iſles are very moderate, and at leaſt one third leſs than thoſe of Tobreonoo. Though they be high enough to attract the clouds, and often to have their ſummits involved in them, they are however far removed from the line of eternal ſnow, which in Peru under the line, was found to be at 5,340 yards above the ocean. Theſe obſervations on the difference of the line of eternal ſnow, give us an opportunity of communicating ſome hints or conjectures on the cauſes of this difference. *Firſt* it appears that the beams of the ſun falling more vertical on the earth, cauſe a greater degree of heat, and in proportion as they fall in a more oblique direction, they produce leſs warmth: *ſecondly* the

* If the effect of refraction be taken into the account, then the height will be 9530 feet; If nine miles diſtant, then the hill is 12,252 feet high.

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the nearer to the general level of the earth, the more is the atmosphere heated, probably the beams being there reflected from the unequal surface of the earth, and crossing one another in various directions cause greater warmth; and moreover the atmosphere being denser and more filled with vapours near the common level of the earth, when once warmed to a certain degree, preserves the heat for a longer time *. The contrary must take place in a situation more remote from the common level of the earth, where the atmosphere is thinner and less capable of retaining the warmth. These two principles will contribute to explain the phænomenon. Under the tropicks, the atmosphere and surface of the earth is more heated than towards the poles, because the sun operates at the first place more vertically, and at the other more obliquely, and therefore less effectually: the hills being under the line in a more heated atmosphere, the line of eternal snow, is there naturally more removed from the common level of the earth, than towards the poles, where the air is neither so intensely nor so constantly heated, which consequently brings the line of eternal snow much lower. MOUNTAINS.

The atmosphere being a fluid environing our globe, must consequently be subject to all the laws of nature to which the whole

* Inferiora quoque tepent, primum terrarum halitu, qui multum secum calidi affert, deinde quia radii solis replicantur & quousque redire potuerunt, replicato calore benignius fovent. *Seneca Nat. Quæst. l. 2. c. X.*

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MOUNTAINS.

globe is subject. As the power of gravity near the equinoctial line is known to be less than towards the poles, the atmosphere naturally must be less attracted between the tropicks than beyond them; and consequently being besides more heated and therefore more rarefied, it must extend to a greater height between the tropicks; and probably this may contribute, with the before mentioned causes, towards removing there the line of eternal snow to a greater distance from the common level of the earth.

The probable causes, of the Southern hemisphere being colder in corresponding degrees of latitude, than the Northern hemisphere, shall be explained in the section, wherein we speak of the formation of ice.

SECTION V.

FORMATION OF SOIL.

FORMATION OF SOIL.

THE TROPICAL ISLES have all the appearance of a long existence and fertility. But the Southernmost parts of NEW-ZEELAND, TIERRA DEL FUEGO, STATEN-LAND, SOUTHERN-GEORGIA and SANDWICH-LAND are still unimproved, and in that rude state in which they sprung up from the first chaos; with this distinction, that the farther you proceed towards the line and the climates

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climates capable of being assisted by the benevolent influence of the sun, the greater advances you discover towards improvement and fertility. FORMATION OF SOIL.

All the various particles of mineral bodies whatsoever are dead, and only the organic bodies of vegetables and animals are capable of life. Wherever we meet the first only, there nature has all the appearance of barrenness, the horrors of desolation and silence of death. But the least addition of vegetation enlivens the scene, and even the slow motions of unwieldy and torpid seals and grave pinguins on the shores, infuse life and chearfulness into the beholder. But when the surface of a land is clad with plants and diversified with birds and animals, then first we have an idea of the vivifying powers of nature and its great Lord. This previous observation therefore, will enable us to form a just idea of each of the above unimproved, rude lands. The barren bleak rocks of SANDWICH-LAND seem not to be covered by the least atom of mould, nor is there any vestige of vegetation to be seen: immense loads of eternal snow, bury these barren rocks, *as if doomed to be under the curse of nature, and continual fogs involve it in perpetual darkness* *. SOUTHERN-GEORGIA has on its North West point a little isle, which is covered with greens, and in Possession Bay we saw two rocks,

* *Pliny*'s words, Hist. Nat. l. 4. seem therefore to be best applicable to this miserable land: *pars mundi damnata a rerum natura & æterna mersa caligine.*

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FORMATION OF SOIL.

rocks, where nature has just begun her great work, in producing organic vegetable bodies, and in forming a thin coat of soil, on the the tops of barren cliffs; and so sparing was she of these her presents, that no more than two plants would vegetate here, the one a grass *(Dactylis glomerata)* and the other a kind of burnet *(Sanguisorba.)*

To TIERRA DEL FUEGO, the next land to the Westward, I will join *Staten-Land* on account of the great similarity they bear to each other, in the general face of the country. In the cavities and crevices of the huge piles of rocks forming these lands, where a little moisture is preserved by its situation, and where from the continued friction of the loose pieces of rocks, washed and hurried down the steep sides of the rocky masses, a few minute particles, form a kind of sand; there in the stagnant water gradually spring up, a few algaceous plants from seeds carried thither on the feet, plumage, and bills of birds: these plants form at the end of each season a few atoms of mould, which yearly increases: the birds, the sea, or the wind carries from a neighbouring isle, the seeds of some of the mossy plants to this little mould, and they vegetate in it during the proper season. Though these plants be not absolute mosses, they are however nearly related to them in their habit: we reckon among them the IXIA *pumila*; a new plant which we called DONATIA, a small MELANTHIUM, a minute

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FORMATION OF SOIL.

OXALIS and CALENDULA, another little dioicous plant, called by us PHYLLACHNE, together with the MNIARUM.* These plants, or the greater part of them, have a peculiar growth, particularly adapted to these regions, and fit for forming soil and mould on barren rocks. In proportion as they grow up, they spread into various stems and branches, which lie as close together as possible: they spread new seeds, and at last a large spot is covered; the lowermost fibres, roots, stalks and leaves gradually decay and push forth on the top new verdant leaves: the decaying lower parts form a kind of peat or turf, which gradually changes into mould and soil. The close texture of these plants, hinders the moisture below from evaporating, and thus furnishes nutriment to the vegetation above, and clothes at last whole hills and isles with a constant verdure. Among these pumilous plants, some of a greater stature begin to thrive, without in the least prejudicing the growth of these creators of mould and soil. Among these plants we reckon a small ARBUTUS, a diminutive myrtle, a little dandelion, a small creeping CRASSULA, the common PINGUICULA *alpina*, a yellow variety of the VIOLA *palustris*, the STATICE *armeria*, or sea pink, a kind of burnet, the RANUNCULUS *lapponicus*, the HOLCUS *odoratus*, the common celery, with the ARABIS *heterophylla*. Soon after we observed in places that are still covered with the above-mentioned

* See Forster. Nova Genera Plantarum.

FORMATION OF SOIL.

mentioned mossy plant, a new rush (JUNCUS *triglumis*) a fine AMELLUS, a most beautiful scarlet CHELONE, and lastly, even shrubby plants, *viz.* a scarlet flowered, shrubby plant of a new genus, which we called EMBOTHRIUM *coccineum*; two new kinds of berberis, (BERBERIS *ilicifolia* & *mitior*;) an arbutus with cuspidated leaves (ARBUTUS *mucronata*) and lastly the tree bearing the Winter's bark (DRIMYS *winteri*) which however in these rocky barren parts of Tierra del Fuego never exceeds the size of a tolerable shrub; whereas in Succes Bay, on a gentle sloping ground, in a rich and deep soil it grows to the size of the largest timber. The falling leaves, the rotting mossy plants, and various other circumstances increase the mould and form a deeper soil, more and more capable of bearing larger plants. Thus they all enlarge the vegetable system and rescue new animated parts of the creation from their inactive, chaotic state.

I cannot pass over in silence the peculiar growth of one species of grass on New Year's Isle, near Staten Land, and which we likewise observed at South-Georgia: it is the well-known *Dactylis glomerata*, or one of its varieties. This grass is perennial, and bears the rigours of the coldest winters: it grows always in tufts or bunches, at some distance from each other. Every year the shoots form, as it were, a new head, and enlarge the growth of the bunch, till at last you see these bunches of the height of four or five feet, and at

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the top two or three times broader than at the bottom. The leaves and ſtalks of the graſs are ſtrong, and often three or four feet long. Under theſe tufts the urſine ſeals and pinguins take ſhelter; and, as they come ſo often dripping out of the ſea, they make the lanes between the tufts extremely dirty and muddy, ſo that a man cannot walk, except on the tops of the tufts. In other places the ſhags (*Pelecanus carunculatus*) take poſſeſſion of theſe tufts, and make their neſts on them; ſo that by this graſs, and the excrements of ſeals, pinguins, and ſhags, the ſoil of the country gradually becomes more and more elevated. FORMATION OF SOIL.

In the Southern parts of New Zeeland we find the formation of mould and ſoil much more forward, becauſe its climate is milder, the ſummer longer, and vegetation more quick and ſtrong: but, upon the whole, we obſerve the ſame analogy in its origin. All ſorts of ferns and of ſmall moſſy plants, eſpecially the MNIARUM, occupy large ſpots; which, by their continual ſpreading and yearly decay, increaſe the mould, and thus form a ſoil for the reception of numerous ſhrubs. Their foliage every year putrifies, and accumulates the precious treaſure of fertile mould, in which at laſt the largeſt trees grow to an immenſe extent and bulk; till, decaying by old age, a violent, impetuous ſtorm breaks them down; and they, in their fall, cruſh numberleſs buſhes and ſhrubs, that paſs together into a ſtate of putrefaction, and afford ſpace and nutriment for a

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FORMATION OF SOIL.

whole generation of young trees, which muſt in their turn decay, to make room for others. All this ſeeming ſcene of deſtruction and confuſion is one of the œconomical actions of nature, thus hoarding up a precious quantity of the richeſt mould, for a future generation of men, who, one day or other, will live upon the rich products of this treaſured ſoil.

Terra nos naſcentes excipit, natos alit, ſemelque editos ſuſtinet ſemper: noviſſime complexa gremio, jam a reliqua natura abdicatos, tum maxime ut mater operiens—Benigna, mitis, indulgens uſuſque mortalium ſemper ancilla, quæ coacta generat, quæ ſponte fundit! quos odores, ſaporeſque! quos ſuccos! quos tactus! quos colores! quam bona fide creditum fœnus reddit! quæ noſtri cauſa alit! PLIN. Hiſt. Nat. lib. 2. c. lxiii.

CHAP.

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CHAP. II.

Remarks on Water and the Ocean.

[AQUA.] HOC ELEMENTUM CÆTERIS OMNIBUS IMPERAT.

Plin. Hiſt. Nat. lib. 31. c. 5.

SECT. I.

SPRINGS.

SPRINGS. IN the SOCIETY ISLES we found very copious ſprings, of the moſt limpid, cool, and fine water; one of them eſpecially, in O-RAYETEA, might vie with Horace's *Fons Blanduſiæ*. The natives had enlarged it to a fine reſervoir, ſurrounded by large ſtones, in a ruſtic manner, blended with pleaſing ſimplicity. Some groups of the fineſt trees and flowering ſhrubs, together with the impending venerable rocks from whence the water iſſued, involved it in a conſtant ſhade, and preſerved a delicious coolneſs. The chryſtalline ſtream, conſtantly running from the reſervoir, the verdure of the trees and environs, invited the traveller, in theſe hot regions, to a refreſhing ablution of his wearied limbs, from which he roſe with new vigour to ſupport the ſultrineſs of the climate, and to go chearfully through the duties of life.

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SPRINGS. In TANNA we diſcovered on the ſide of the harbour towards the Volcano, ſeveral hot ſprings, called by the natives *Doogòos*. The water came out of the black ſtratum of ſand-ſtone mentioned before, cloſe to the edge of the ſea; and at high-water the wells were ſometimes covered by the ſea.

We ſaw ſeveral of theſe hot ſprings near each other; and, as there were little cavities under them, we cleared them of the rubbiſh, and after the water had filled the cavities and overflowed for ſome time, I took my portable thermometer, with Fahrenheit's ſcale, made by Mr. Ramſden, (which had been that day, in my cabin, at 78° and which, having been carried cloſe to my body in a pocket, I found at 80°,) and having placed it in the hot well, ſo that the whole bulb and tube were covered, the quickſilver roſe ſoon to 191°, but after having been for five minutes in the well, it did not riſe above that degree. I took the thermometer out, and cleared the well ſtill better, and made the excavation of the ſtone below deeper, and then immerſed it again during ten minutes, but found it all the time at 191°. This was done Auguſt the 17th, 1774, at 4h 30′ P. M. at high-water. We returned the next morning about nine o'clock, when the water was low; and, upon immerſing the thermometer as before, we obſerved the quickſilver to riſe to 187° in the ſpace of one minute and a half; at which degree it remained, though the thermometer continued ſeveral mi-

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nutes longer in the water. I threw ſome ſmall fiſh, and ſome muſcles, into the hot water, and they were boiled in a few minutes. The water is clear and limpid, and has no peculiar taſte, except that I thought it to have a very faint aſtringency. I put a piece of fine and bright ſilver into it, which having lain for more than an hour in it, came out untarniſhed. I put a ſmall quantity of ſolution of ſalt of tartar in it, but it did not precipitate any thing, though I increaſed the quantity of the tartar. I had no other ſubſtances with me to try the water by other methods. SPRINGS.

On the ſame cliff, but cloſe to the ſandy beach, at the bottom of the harbour, there are two other hot ſprings. We came on the ſame morning, Aug. the 18th, half an hour later, to theſe ſprings. I hollowed out the ſand to gather ſome of the hot water, and immerſed my thermometer juſt at the place where the water bubbles up, and in about two minutes time the quickſilver roſe to 202, and remained for ſeveral minutes in the water without riſing higher. On the ſame cliff, on a brow about 60 or 80 fathoms higher, we found a place clear of trees, where in cool weather, eſpecially after rain, we could diſcover from the ſhip, ſteams riſing, which were ſtill more diſtinctly obſerved when we came cloſe to the place. We found ourſelves, after a few minutes ſtay, in a profuſe perſpiration, occaſioned by the hot ſteams, and the heat of the ground we ſtood on, which in ſome places was intolerable. When the volcano made

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SPRINGS. an exploſion, we always ſaw a new quantity of vapours and ſteams pierce theſe ſpiracula, which are apparently ſhut up, but ſeem to have a cavity underneath; for the whole mountain gave a hollow ſound, when we were walking on the footpath leading to theſe ſolfataras; and I likewiſe traced a train of theſe ſpiracula, both above and below on the ſides of this hill, as far as within a few yards of the hot wells. I ſaw the ſolfataras three times. The ſecond time I took my thermometer with me, and having dug a hole about a foot deep, I hung the thermometer in it by the ribbon on its top, to a ſtick laid acroſs the hole; and I ſaw it riſe from 80° in a few ſeconds to 170°: having left the thermometer for four minutes in the hole, I found it ſtill at 170°, and though I repeated this at one minute's interval, three times, the mercury was ſtill at the ſame degree. When I took it out, it fell in a ſecond's time to 160°, and gradually lower. In my cabin on board the ſhip, it ſtood at 78°; having been carried cloſe to my body up the hill, by a long aſcent, it roſe to 87°; I hung it therefore in the open air, in the ſhade of a tree on the hill, about twenty yards from the ſmoaking place, for about five minutes, and found it to ſtand at 80°, and to remain at the ſame height for a long while after. When I was digging the hole for the reception of the thermometer, the natives ſeemed uneaſy, and were apprehenſive the place would be on fire. This happened on Auguſt the 12th at about ten o'clock in the morning.

I went

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I went up again on Auguſt the 14th in the forenoon, and repeated the experiment with this difference only, that we entirely buried the thermometer in the hole, by putting looſe earth round it. It had ſtood that day in my cabin at 78°, on the hill at 80°; but after having been buried a minute, it roſe to 210° and there it remained ſtationary for five minutes. As I could trace the ſpiracula of hot ſteams, blended with ſome ſulphureous ſmell, all along the ſide of the hill, down to the hot wells; it is probable, that a ſtream of water, in a ſubterraneous chaſm or crevice, coming too near one of the places, that are violently heated by the neighbouring volcano, is reſolved into ſteams, and forced through the earth and ſtones; parts of it however ſeem again to gather ſomewhere in ſmall ſtreams, oozing out at the hot wells, cloſe to the ſea-ſide. I am even apt to believe, that this chaſm or crevice is connected with the crater of the volcano: for on Auguſt the 11th, when the volcano was heard making great exploſions, and ſeen throwing up very large maſſes of ſtones, ignited aſhes, and immenſe clouds of thick ſmoke, we obſerved on the hill, that at each exploſion, there came new quantities of ſteam through the ſpiracula. SPRINGS.

At the bottom of the harbour near the beach, is a ſmall pond containing ſome freſh and palatable water; it is tinged ſomewhat browniſh and though perfectly good when freſh, it ſoon contracted

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SPRINGS. in the caſks a much greater degree of putrefaction and fœtid ſmell, than had been obſerved of any other water during the whole voyage, which I believe proves that ſome foreign, perhaps inflammable particles are contained in this water. This pond was connected, within the buſhes, with a range of ſtagnant, muddy waters, for more than a mile or two, along the plain oppoſite the harbour. Theſe waters, are it ſeems gathered here during the rainy ſeaſon; and as they have no viſible drain, they collect in the loweſt parts and ſtagnate, and as the whole ſurface of the ſoil of the iſle is formed of volcanic aſhes, containing all more or leſs ſaline or ſulphureous particles, the water may diſſolve them, and ſtrike the brown colour by extracting the vegetable ſubſtances gradually falling into or coming into contact with it.

In the reſt of the iſles belonging to the NEW HEBRIDES, we frequently obſerved large ſtreams of water forming caſcades on the ſteep deſcents of hills, and thus precipitating themſelves down and ſoon mixing with the briny fluid of the ocean.

The FRIENDLY ISLES ſeem to be deſtitute of ſprings: for though on ſome of them, as *Eaoowhe* and *Namocka*, there are ſmall hills and riſing grounds, they are however far from being ſo high as to attract the clouds or to cauſe from their perpetual moiſture a continual flow of ſpring-water. The natives have ponds, ſome of which are large, wherein they collect the rain-water: but it is

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ſomewhat brackiſh from the vicinity of the ſea. Beſides theſe ponds of freſh water, there is in *Namocka* a large lagoon of ſalt water about three miles long, full of ſmall iſles, beautifully ornamented with cluſters of trees, crowded with wild ducks, and ſurrounded by buſhes of mangroves and hills forming a romantic landſcape. SPRINGS.

In HUAHEINE, one of the Society Iſles, there are on its North point likewiſe two large ſalt water lagoons, with a very muddy bottom; as they are ſhallow, conſiderably within the land, ſurrounded by thick buſhes and large trees, and therefore very little agitated by winds, they ſtink moſt immoderately, and muſt I ſuppoſe, ſpread noxious effluvia; and I muſt confeſs, I ſaw only a few habitations on its South ſide near the hills, and thoſe were not quite contiguous to the lagoons.

In NORFOLK ISLAND we found a ſmall ſpring, and I believe if we had ſearched the whole iſle over, we ſhould have found more.

EASTER ISLAND has no other water, but what is found in ſome reſervoirs in forms of wells or ponds, collected I ſuppoſe from rain. It is ſtagnant, bad and ſomewhat brackiſh.

The MARQUESAS have abundance of the fineſt ſprings, forming many beautiful ſtreams and caſcades: for their cloud capt hills, are conſtantly moiſtened from the vapour of the clouds, and therefore yield plentiful ſupplies for the ſprings in this hot climate.

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SPRINGS. NEW-ZEELAND no doubt has abundance of ſprings and rivulets; and there is hardly an iſlet or rock, which is not bleſſed with a ſpring of freſh water. In *Duſky Bay* there are ſeveral rich ſprings; but all the water running and being drained through a rich, ſpungy, looſe mould formed from putrefied vegetables, has acquired a deep brown colour; it is nevertheleſs free from foulneſs, has no peculiar taſte and keeps at ſea remarkably well.

TIERRA DEL FUEGO is richly provided with the fineſt ſprings and large ponds of freſh water, from the melted ſnow, on its high and barren rocks. In ſome places we obſerved large and high caſcades, which greatly contribute to ſoften the harſhneſs of its wild ſcenery.

In SOUTH-GEORGIA and SANDWICH-LAND, we met with no ſprings: but as there is ice enough in its vicinity and even as far as the parallel of 51° South latitude, in their ſpring ſeaſon, and in the depth of ſummer and autumn higher up in 67° and 70°, a navigator cannot be at a loſs for freſh water in high Southern latitudes.

If I except the water at Tanna in the hot wells, which perhaps may contain ſome ſaline particles on account of a faint aſtringency I taſted, we did not meet with any other medicated water whatſoever in the courſe of our expedition.

SECT.

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SECTION II.

RIVULETS.

RIVULETS.

ALL the ſprings of the Society Iſles, Marqueſas, and New-Zeeland form rivulets; but none of them are ſo conſiderable as to deſerve a particular notice. In Duſky Bay where all the inlets of the ſea are very deep, we always found, that wherever the bottoms of bays or creeks have a ſtream of water coming down, the water gradually ſhoaled, ſo that at a good diſtance from the bottom of the bay, the boats ran a ground; which I think confirms the opinion, that theſe ſtreams having by their impetuoſity after a heavy rain or melting of ſnow from the ſides of the ſteep hills, carried a great many earthy particles down to the very mouth of the rivulet, they depoſit them there gradually: being, as I ſuppoſe, neceſſitated to this depoſit by the reſiſtance of the briny and therefore heavier fluid of the ocean, by the winds and tides meeting the ſtream, and other ſuch cauſes.

We obſerved, in the ſeveral inlets and arms forming this ſpacious bay, ſometimes *caſcades* ruſhing rapidly down, and falling from vaſt heights before they met with another rock. Some of theſe caſcades with their neighbouring ſcenery, require the pencil and

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RIVULETS. genius of a SALVATOR ROSA to do them juſtice: however the ingenious artiſt, who went with us on this expedition has great merit, in having executed ſome of theſe romantic landſcapes in a maſterly manner.

The upper parts of all the rivulets in the Society Iſles, are not ſo uſeleſs or neglected, as might be imagined. Wherever the natives obſerve that the valley between the ſteep ſides enlarges, there they form a wear, by piling large ſtones ſo high, that the water is raiſed on a level with or even higher than the plain; which they ſurround with a ſmall bank, make it level and plant it with eddoes or *arum eſculentum*, a plant which likes to be under water and thus grows into large tuberous roots; they then admit the water into theſe plantations from above the wear and diſcharge it at the oppoſite end. The wears ſerve the natives at the ſame time for a bridge, they being extremely ſkilful in jumping from one large ſtone to another, and ſometimes carrying at the ſame time a burthen on their backs

SECT. III. OCEAN.

OCEAN. THE laſt and moſt conſiderable body of water is the ocean. It highly deſerves to be examined on many accounts, and though the remarks we have to make on it are but few and perhaps trivial,

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we will venture to communicate them, as they may ſerve to confirm ſome known poſitions. OCEAN.

The DEPTH of the OCEAN.

THE DEPTH of the ocean is certainly one of the moſt remarkable circumſtances. We now and then even out of ſight of any land, tried to meaſure this depth; for inſtance in the year 1772 Sept. 5th. being near the line in 00° 52 North latitude, we could find no ground with 250 fathom. On February 8th. 1773, when we were in ſomething more than 48° South latitude, a little to the Eaſt of the meridian of the iſle of *Mauritius*, we had 210 fathom line out, but found no ground. On November the 22d. 1774 being in the middle of the pacific ocean, we ſounded with 150 fathom and found no ground.

It has been laid down as a maxim by the learned and ingenious Count DE BUFFON * "that the depth of the ſea along "the coaſts is commonly ſo much greater as theſe coaſts are more "elevated, and again ſo much leſs as they are lower, and that the "inequality of the bottom of the ſea generally correſponds with "the inequality of the ſurface of the ſoil of the coaſt;" and Dampier is quoted in confirmation of this aſſertion. Though the learned author

* Hiſtorie naturelle tom 2d p. 199 & 200. Edit. in 12mo.

OCEAN. author certainly merits the applauſe of the world, it has however been the fate of his work to have the common ſtamp of all human productions; viz. to have ſome imperfections, and even to recount ſome falſe aſſertions upon the faith of other authors and travellers: the illuſtrious author, is ſo well known for his love of truth, and for the variety of his erudition, that he will no doubt find it juſt to give his work all that perfection, which it is capable of, by correcting whatſoever is not ſtrictly conformable to truth and nature. I will therefore, on the ſtrength of this ſuppoſition and the encouragement perſonally given me by himſelf, remark that his obſervation will hold in regard to large lands; it is however equally true, that in regard to all the low iſles in the South ſeas, and even in regard to the low reefs ſurrounding the Society Iſles, this rule admits of many exceptions. In New Zeeland, Tierra del Fuego, New Caledonia and all the New Hebrides, I believe the rule to be true: for all theſe lands are high and have generally bold coaſts; and the ſoundings are deep cloſe into the ſhore without decreaſing. I have however in ſome inſtances obſerved juſt the contrary; as off the South entrance of Duſky Bay we had about 45 fathoms water; but in the bay itſelf we had no ground with 80 fathom line. Off the South coaſt of Tierra del Fuego between Cape Noir and Chriſtmas Bay, we had 45 and 50 fathom water, which increaſed to 60 or 70; but when we ſtood in for Chriſtmas Bay we had

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no ground with 80 fathom of line, in the very entrance. When we were off the coast of South Georgia we had regular soundings, but in the entrance of Poſſeſſion Bay we had no ground with 54 fathoms. According to the above rule of Mr. de Buffon, the low iſles in the South-Seas ſhould have gradual ſoundings; but we found the contrary to be true: for cloſe to the reef forming theſe iſles, the water is almoſt unfathomable. The ſame may be ſaid of O-Taheitee and all the Society Iſles, which are ſurrounded by a fertile plain extending from the hills to the ſea, and then included in a reef, beyond which the ſea immediately becomes exceſſively deep. Near Turtle-Iſland we ſaw an oblong reef, which was no where free from water, had a deep ſea included, and on its outſides there was a great depth cloſe to the reef. All theſe inſtances here enumerated, ſeem to be exceptions to Mr. de Buffon's rule. OCEAN.

The COLOUR of the OCEAN.

WHEREVER there is an extenſive bank or a ſhoal, there the colour of the ſea-water is changed; but even this is ſubject to many exceptions: ſometimes we find places which are amazingly clear, and the ground, at the depth of ſeveral fathoms, may be ſeen as plainly as if it were within a few yards of the ſurface; ſometimes

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OCEAN. the ſea aſſumes a grey hue, and ſeems turbid, as if it had loſt its limpidity. But often you are deceived by the ſituation of the ſky and clouds. Dark, cloudy weather involves likewiſe the whole ocean in a grey hue. A ſerene and clear ſky tinges the waves with the fineſt berylline or blueiſh-green colour. If a cloud appears, it gives to a ſpot of the ſea a hue quite different from the reſt; and, if not well attended to, often alarms the navigator with the fear of ſoundings, or even ſhoals. A judicious eye, conducted by long experience, can alone diſtinguiſh properly in theſe caſes. But, upon the whole, it cannot be too much recommended to navigators, eſpecially in unexplored ſeas, to make uſe of the lead in every doubtful ſituation *.

Of the SALTNESS of the OCEAN.

IT has been ſuſpected, that the *ſaltneſs* of the ocean is not every where equal. Some aſſert the ſea to be ſalter under the Line than towards the Poles †; that the great oceans are ſalter than the ſmaller ſeas, which are almoſt included by land, viz. the Baltic, the Mediterranean, the White Sea near Archangel, the Perſian and the Arabic Gulphs, &c.; that its ſaltneſs increaſes with its large

* See Mr. *Dalrymple's Memoir of a Chart of the Southern Ocean.* p. 7.

† Buffon's Hiſtoire Naturelle. tom. 2. p. 79. edit. in 12mo.

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depth; and lastly, that the high sea, at a great distance from land, is salter than near it, and especially near places where large rivers fall into the sea. I had no opportunity to make the necessary experiments to ascertain or to refute these assertions, as I was obliged to set out upon this expedition almost at a moment's warning, and could not therefore provide any apparatus necessary for that purpose. The above remarks may, however, serve to future navigators, as a hint of what is still wanted to be observed, relative to the saltness of the ocean. I should therefore propose to them, to procure the apparatus described by Mr. *Wilke*, in the *Memoirs of the Swedish Academy*, vol. 33, n. 6 of the 1st quarter, which serves to bring the water of the ocean up from any given depth: they ought also to be provided with an accurate and nice hydrostatical balance, in order to ascertain the specific gravity of any water or liquid; or they may make use, for convenience-sake, of a *haloscopium*, consisting of a hollow globe of ivory, into which a tube of about five or six inches must be inserted, on which the different specific weights of pure water, and its various mixtures with certain quantities of common salt, are marked in degrees; so that, by immersing this simple machine into sea-water, it would be easy to ascertain the degrees of its saltness. This machine would likewise serve to ascertain the comparative purity and weight of every water found in rivers, wells, &c. &c. OCEAN.

OCEAN. It has likewise formerly been believed, that, besides the common saltness, the water of the ocean contained particles, which communicated to it a kind of bitterness, that made it next to impossible to distil drinkable water from sea-water. The ingenious Dr. LIND, of Haslar-hospital, near Portsmouth, has long ago shewn how little foundation there is in this prejudice, and has likewise taught the British nation, without any public reward or encouragement, an easy and approved method for obtaining, by distillation, potable water from sea-water *. When we made use of Dr. Irving's distilling machine, we likewise found, that the water thus distilled was not only entirely freed from its salt, but, besides this, we never could discover the least bitter particle in the drinkable water. But it must not by any means be concluded from hence, that there are no such bitter particles contained in the sea-water; for every one knows too well, that, after the fresh water has been evaporated from sea-water, and salt has been thereby formed, there remains always a thick, gelatinous lie, which cannot be crystallized, and which is nothing but a mixture, containing marine acid and *magnesia alba*; and, besides these ingredients, the sea-brine always contains some Glauber's salt and some selenitic particles; so that it seems as if the whole were a mixture of fresh water, marine acid, vitriolic acid, fixed mineral alkali, magnesia, and lime. However, though several

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* Lind's Essay on Diseases incidental to Europeans in hot climates. Appendix, p. 351.

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veral of these substances form a bitter salt by their mixture, they nevertheless will not hinder the sea-water from affording a clear, limpid, potable water by distillation, because the particles being all fixed, remain in the salt-brine, which is left in the copper; and the water being alone volatile, rises in steams, and is distilled. Or even if, by distillation, a few acid or saline particles should be volatilized, and mix with the distilled water, their proportion is certainly so small and insignificant, that no detriment can be derived from thence. On the usefulness and practicability of the method of distilling water, I can say nothing, as it is not my province, and as a report has been made to the Admiralty by persons, whose proper business it was.

The WARMTH, or TEMPERATURE of the OCEAN.

To ascertain the degree of *warmth* of the sea-water, at a certain depth, several experiments were made by us. The thermometer made use of, is of Fahrenheit's construction, made by Mr. Ramsden, and furnished with an ivory scale; it was, on these occasions, always put into a cylindrical tin case, which had at each end a valve, admitting the water as long as the instrument was going

OCEAN. down, and ſhutting while it was hawling up again. The annexed table will at once ſhew the reſult of the experiments.

Date.	Latitude.	Degrees of Fahrenheit's Thermometer.			Depth in fathoms.	Stay of the Thermometer in the deep.	Time in hauling the Thermometer up.
		In the air.	On the ſurface of the ſea-wat.	At a certain depth in the ſea.			
1772. September 5.	00° 52′ N.	75½°	74°	66°	85 F.	30′	27½′
27.	24° 44′ S.	72½°	70°	68°	80 F.	15′	7′
October 12.	34° 48′ S.	60°	59°	58°	100 F.	20′	6′
December 15.	55° 00′ S.	30½°	30°	34°	100 F.	17′	5½′
23.	55° 26′ S.	33°	32°	34½°	100 F.	16′	6½′
1773. January 13.	64° 00′ S.	37°	33½°	32°	100 F.	20′	7′

From this table it appears, that under the Line, and near the Tropics, the water is cooler at a great depth than at its ſurface. In high latitudes, the air is colder ſometimes, ſometimes very near upon a par, and ſometimes warmer than the ſea-water at the depth of about 100 fathoms; according as the preceding changes of the temperature of the air, or the direction and violence of the wind

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happen to fall out. For it is to be obſerved, that theſe experiments were always made when we had a calm, or at leaſt very little wind; becauſe, in a gale of wind, we could not have been able to make them in a boat. Another probable cauſe of the difference in the temperature of the ſea-water, in the ſame high latitude, undoubtedly muſt be ſought in the ice; in a ſea covered with high and extenſive ice iſlands, the water ſhould be colder than in a ſea which is at a great diſtance from any ice. OCEAN.

The PHOSPHOREAL LIGHT of the SEA-WATER.

IT is very well known, that the ſea-water has ſometimes a luminous appearance, or, to uſe a more philoſophical word, a *phoſphorical light*. Many have endeavoured to give us the real cauſes of this phænomenon *; and, in conſequence, ſome have brought us the drawing of a curious ſubmarine inſect, related to the ſhrimp kind, which had a peculiar luminous appearance, and aſſerted this to be the cauſe of the phoſphoreal light of the ſea †. Others again aſcribe it to the great number of animals of the molluſca-tribe, ſwimming

* The Father Bourzes, in the Lettres Edifiantes, tom. ix. Par. 1730, ſpeaks of the phoſphoreal light of the ſea with judgment; and ſtill more ſo, the late ingenious philoſopher, Mr. Canton, Phil. Tranſ. vol. ix. p. 446, in his paper on the luminous appearance of the ſea.

† See the Gentleman's Magazine, for 1771; and Baſteri Opuſc. ſubſec. Tom. 1. P. 1. p. 31. Tab. iv. *fig.*

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OCEAN. swimming every where in the sea. The above-mentioned shrimps, as well as the mollusca, may contribute to make the sea appear luminous; but I would not venture to assert these to be the *only* causes of the phosphoreal light, after the observation of the various phænomena I made in the course of this long voyage.

First, I found reason to doubt, whether all the luminous appearances in the sea are of the same nature; for one kind of these phænomena never extend to a great distance from the ship; that part of the sea only appears luminous which is close to the ship, and the light is likewise communicated only to the top of the next waves, that break obliquely from it; and this happens commonly in a fresh gale.

Another kind of phosphoreal light I observed commonly in, or immediately succeeding a long calm, after hot weather; it spread more over, and even mixed with the body of the sea, than the former. When we took the sea-water in this condition into a tub, it there became dark as soon as it was free from motion: but, at each violent agitation of the water, it appeared luminous, where the motion was produced, and seemed to stick for a moment only to the finger or hand, which agitated the water, but disappeared as instantaneously.

The

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The third kind of phoſphoreal light is no doubt cauſed by mol- OCEAN.
luſca *, whoſe whole figure may be diſtinguiſhed in the water by their own luminous appearance. I have obſerved, though rarely, the ſame effect to be occaſioned by fiſh and ſhell-fiſh †; and there may be likewiſe ſome ſhrimps and other inſects ‡, that are phoſphoreſcent, though I have never ſeen them. But the moſt ſingular and ſurprizing appearance of this nature, I obſerved in the night preceding Oct. 30, 1772, when we were off the Cape of Good Hope, at the diſtance of a few miles from the ſhore, and had a freſh gale. Scarcely had night ſpread its veil over the ſurface of the ocean, when it had the appearance of being all over on fire. Every wave that broke had a luminous margin or top; wherever the ſides of the ſhip came in contact with the ſea, there appeared a line of phoſphoreal light. The eye diſcovered this luminous appearance every where on the ocean; nay, the very boſom of this immenſe element ſeemed to be pregnant with this ſhining appearance. We ſaw great bodies illu-

minated

* The genus of *Sepia* or cuttle-fiſh, and that of *Meduſa* or blubber, ſhine in the water in the dark. See among others *Linné. Syſt. Nat. ed.* xii. *p.* 1095. Alſo, Hawkeſworth's Compilation of Voyages, vol. ii. p. 15.

† Dactyli (Pholades.) His natura in tenebris remoto lumine, alio fulgere claro. *Plin. Hiſt. Nat. lib.* 9. *c.* 87. (61.)

‡ Some of the genus of *Scolopendra* or Centipes, ſhine during the darkneſs of the night, *viz.* the ſpecies called *electrica* and *phoſphorea*, and perhaps ſome other ſpecies, or even genus. The laſt-named ſpecies fell on board of a ſhip ſeveral hundred miles from any land, and has, perhaps, wings like the water-beetle *(Dytiſcus)*, which, at certain times leaves the water, and takes a flight through the air, which may account for the above fact. See *Linn. Syſt. Nat. ed.* xii. *p.* 1064.

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OCEAN. minated moving in the sea,; some came along-side of the ship, and stood on along with her; others moved off from her with a velocity almost equal to lightning. The shape of these illuminated bodies discovered them to be fishes. Some approached near one another, and when a small one came near a larger, it made all possible haste to fly from the danger. I had a bucket full of this luminous sea-water drawn up for examination. We found, that an infinite number of little round luminous bodies were moving in the water with amazing quickness. After the water had been standing for a little while, the small sparkling objects seemed to decrease in quantity, but, by stirring the water again, we observed the whole to be again entirely luminous; and leaving the water undisturbed, we saw the little sparks moving very briskly in different directions. Though the bucket with the water was suspended, that it might be less affected by the motion of the ship, the sparkling objects still moved to and fro', so that this first convinced me, that these luminous atoms had a voluntary motion, quite independent of the agitation of the water or ship; but, at each agitation of the water by a stick or the hand, we plainly perceived the sparkling to increase. Sometimes, by stirring the water, one of these phosphoreal sparks would stick to the hand or finger. They were scarcely of the size of the smallest pin's head. The least magnifier of my microscope discovered these little atoms to be globular, gelatinous,

transl-

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tranſparent, and ſomewhat browniſh. By putting one under the microſcope, we obſerved firſt a kind of thin tube going into the ſubſtance of this little globule, from a round orifice on its ſurface. The inſide was filled with four or five oblong inteſtine bags, connected with the tube juſt mentioned. The ſame appearances were obſerved by the greateſt magnifier, and were only more diſtinct. I wanted to examine one in the water, and then bring it under the microſcope, but I could not provide a live animalcule: they were all dead, on account of their tender ſtructure, before I could ſeparate them from the finger to which they were ſticking. This attempt was accordingly fruſtrated. When we left the Cape of Good Hope, on November the 22d, we had that very night the ſame luminous appearance of the ſea, and a very hard gale. Thus we have again a new cauſe of the phoſphoreal light. But, before we proceed with our remarks, let us only follow the idea ariſing from this phænomenon. The immenſe ocean, filled with myriads of animalcules, which have life, loco-motion, and a power of ſhining in the dark, of laying that power aſide at pleaſure, and illuminating all bodies coming in contact with them; this is a wonder which fills the mind with greater aſtoniſhment and reverential awe, than it is in my power juſtly and properly to deſcribe.

If I were now to ſay ſomething on the different ſpecies of phoſphoreal light, I could by no means give my aſſertion, that degree

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OCEAN. of certainty which philoſophers would require. I will therefore confine myſelf to ſome probable hints concerning their real cauſes.

The firſt ſpecies of luminous appearance ſeems to be produced by a cauſe altogether different from the reſt, and if I may venture to declare my opinion on the ſubject, I ſhould think, that this light is owing to electricity. We know very well, that the motion of a ſhip through the water in a gale, is extremely ſwift, and the friction cauſed by this motion very great: for we find that the ſea agitated by a gale of wind is remarkably warmer, than the air *. The bituminous ſubſtances, which cover the ſides of ſhips, the nails ſticking in the bottom, and the conducting power of water will equally ſerve to explain the poſſibility of ſuch an electricity.

The ſecond ſpecies of luminous appearance in ſea water ſeems to be a real phoſphoreal light. It is very well known, that many animal bodies putrify and are diſſolved in the ſea, and that almoſt every part of animal and many mineral bodies, and the air itſelf, contains the acid of phoſphorus as an integrant part †. The addition of any inflammable principle to this acid, will produce the ſubſtance we call *phoſphorus*. Every one who has ſeen ſalted fiſh drying, muſt know that many of them become phoſphoreal. It is likewiſe a well eſtabliſhed fact, that the ocean, itſelf after a long

* *See a voyage towards the North Pole, by Capt. Phipps. Appendix.* p. 147.

† See Elemens de Mineralogie docimaſtique par M. Sage. Paris 1777, 8vo. Preface p. xi. vol. II. p. 376, 377, 378.

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continued calm, becomes ſtinking and highly putrid †, ariſing probably from the putrefaction of a great many animal ſubſtances, that die in the ocean, float in it, and in hot calm days frequently and ſuddenly putrefy. That fiſhes and molluſca contain oily and inflammable particles is equally well known. The acid of phoſphorus diſengaged by putrefaction from its original mixture in animal bodies, may eaſily combine with ſome of the juſt mentioned inflammables, and thus produce a phoſphorus floating on the top of the ocean, and cauſing that luminous appearance, which we ſo much admire. OCEAN.

Laſtly the third kind of phoſphoreal light no doubt ariſes from live animals floating in the ſea and is owing to their peculiar ſtructure or rather the nature of their integrant parts, which perhaps might be inveſtigated, by analyzing chemically ſome of the molluſca, which have a luminous appearance.

On the QUESTION concerning the EXISTENCE of a SOUTHERN LAND.

A SUSPICION was long ſince entertained by the author of the Univerſal Hiſtory, and by the learned and ingenious Preſident DES

† See Boyle. T. III. p. 222, he relates that ſome navigators, in a calm which laſted thirteen days, found the ſea becoming putrid.

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OCEAN. BROSSES, * of a great Southern continent, founded on the argument, that in caſe there ſhould be no more land in the Southern hemiſphere, than what we knew before, it would be inſufficient to counterpoiſe the weight of lands in the Northern. An ingenious author, whoſe diſintereſted zeal for the promotion of geography, navigation and diſcoveries is not leſs conſpicuous, than his many virtues as a man, a citizen and a friend, has lately † endeavoured to ſet theſe arguments in a ſtronger light. Our preſent circumnavigation has, I believe, put it beyond doubt, that there is no land on this ſide of 60° in the Southern hemiſphere, if we except the few inconſiderable fragments we found in the Southern atlantic ocean. If therefore we ſhould even ſuppoſe, that the whole ſpace from 60° and upwards, where we have not been, be intirely occupied by land, this would be ſtill too inconſiderable to counterpoiſe the lands of the Northern hemiſphere. I am therefore apt to ſuſpect, that nature has provided againſt this defect, by placing perhaps at the bottom of the Southern ocean ſuch bodies as by their ſpecific weight will compenſate the deficiency of lands; if this ſyſtem of the wanted counterpoiſe be at all neceſſary. But there may perhaps be other methods to obviate this defect, of which our narrow knowledge and experience have not yet informed us.

SECT.

* *Modern Univerſal Hiſtory*, *Folio Edit.* vol, V. p. 2. note c. or 8vo edit. vol. XI. p. 275. *Voyages aux Terres Auſtrales*, vol. I. p. 13.

† *Dalrymple's collection of voyages to the South-Sea*, vol. p.

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SECT. IV. ICE AND ITS FORMATION.

ICE.

NOTHING appeared more ſtrange to the ſeveral navigators in high latitudes, than the firſt ſight of the immenſe maſſes of ice which are found floating in the ocean; and I muſt confeſs, that though I had read a great many accounts on their nature, figure, formation and magnitude, I was however very much ſtruck by their firſt appearance. The real grandeur of the ſight by far ſurpaſſed any thing I could expect; for we ſaw ſometimes iſlands of ice of one or two miles extent, and at the ſame time a hundred feet or upwards above water. We will ſuppoſe, that ice of parallel dimenſions ſwimming in ſea-water, only ſhews one part out of ten above water †; which is a moderate ſuppoſition, becauſe according to Mairan ‡ ice ſwimming in freſh water had one fourteenth part of the whole above its ſurface; nay, Dr. Irving § plunged a piece of the moſt ſolid ice in melted ſnow water and fourteen fifteenth parts ſunk under its level. A piece therefore of only one mile in length, a quarter of a mile in breadth, and 100 feet above water contains 696'960,000 cubic feet of ſolid ice; but as the 100 feet, are only the contents of the ice above water, the ſame muſt be taken nine times more for the contents under water,

† *Boyle Philoſ. Tranſ.* No 62.

‡ *Mairan ſur la glace* p. 264.

§ *A voyage towards the North Pole by Capt. Phipps. Appendix*, p. 142.

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ICE. water; and the whole will then amount to 6,969'600,000 cubic feet of ſolid ice, which muſt of courſe be a ſtupendous maſs. But the enormous ſize of theſe icy maſſes is not the only object of our aſtoniſhment, for the great number of them is equally ſurprizing. In the year, 1773 on the 26th, of December, we counted 186 maſſes of ice all in ſight from the maſt head, whereof none was leſs than the hull of a ſhip. At other times we were every where ſurrounded by ice iſlands, or obliged to alter our courſe, becauſe it was obſtructed by an immenſe field of ice. On theſe occaſions we ſaw firſt ſmall pieces of looſe, broken ice, full of holes and pores like a ſpunge, thus waſted by the continual agitation of the waves; behind them appeared large flat and ſolid maſſes, of an immenſe extent. Between them we obſerved ſtupendous large and high ice iſlands, likewiſe ſolid but formed in the moſt ſtrange manner into points, ſpires and broken rocks. All this ſcene of ice extended as far as the eye could reach. However, it is likewiſe remarkable, that in different years, ſeaſons and places of the ſea, we found the ice differently ſituated. In the year 1772, December the 10th, we ſaw the ice between 50° and 51° of Southern latitude. In 1773 on December the 12th, we found the firſt ice in 62° South latitude. In 1775, in January the 27th, we ſaw ice in about 60° South latitude. On February the 24th, we came to the ſame place, where about 26 months before, we had met with ſuch an impenetrable

body

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body of ice, as had obliged us to run to the East; but where at this last time no vestige of it appeared no more than at the place, where BOUVET had placed his Cape Circumcision, we having sailed over the whole tract, which he suspected to be land; nor could we be mistaken in its situation, as we had been on the same parallel for a considerable time: so that it is impossible to have missed the land, if any had existed, as we had frequent opportunities to ascertain our latitude. ICE.

Another circumstance worthy of notice is, that all ice floating in the sea yields fresh water when melted. However care must be taken never to collect such ice which is spungy and honeycombed from the agitation of the waves, as this kind of ice always contained considerable quantity of brine in the interstices and spungy cavities which does not entirely drain from it by suffering it to lie on the deck of the ship, and therefore is less fit for yielding good potable water. This kind of ice may well be distinguished from the more solid sorts both by its appearance and by its situation, as it commonly is the outermost at the approach of any large quantity of ice, and therefore more exposed to the agitation of the waves. To leeward of large ice masses, commonly loose pieces of ice are drifting of various sizes; those that are nearest the large mass, are commonly the most solid, and therefore the most proper for supplying the ship with water. Of this ice, such pieces are taken up as can be conveniently

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ICE. veniently lifted into the boat; and then they are piled up on the quarter-deck, where the ſalt-water, adhering to its outſide, ſoon drains away; and, as the contact of the deck and warmer atmoſphere contributes to diſſolve ſome part of the ice, the reſt becomes quite freſh. With this ice the boiler is filled, that it may the more readily be diſſolved. Other ice is broken into ſuch pieces as will go through the bung-holes into the water-caſks; and when there is not room for more, the interſtices are filled up, with the water from the boiler, which ſoon melts the ſmall pieces of ice in the caſk.

When we came to leeward of extenſive *portions* of ſmall drifting ice, or ſuch as the Greenlandmen call *packed*, i. e. on the edges of which, by the ſea and preſſure of the ice, ſmall pieces are forced up, we always found the ſea ſmooth; and this was the appearance, when we entered the looſe ice on January the 17th, 1773, in 67° 15′ South latitude; but, on the weather-ſide of the ice, there was a great ſwell and high ſurf. Whenever we approached large tracts of ſolid ice, we obſerved, on the horizon, a white reflexion from the ſnow and ice, which the Greenlandmen call *the blink of the ice:* ſo that ſeeing this phænomenon appear, we were ſure to be within a few leagues of the ice; and it was at that time likewiſe, that we commonly noticed flights of white petrels of the ſize of pigeons, which we called ſnowy petrels, the common fore-runners of the ice.

It

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ICE.

It has been obſerved, that the large maſſes of ice floating in the ocean, cool the air conſiderably; ſo that, upon approaching them, the change may be ſenſibly felt.

On the 11th of December, 1772, on a clear mild day, before we reached a large maſs of ice, of about half a mile in length, and a hundred feet high, the thermometer on deck, fixed on the capſtan, was at 41°. When we were to leeward of it, the thermometer ſunk to 37½°; and when we had paſſed it, which was at about five o'clock in the afternoon, it had riſen again to 41°. On December the 13th, 1772, in the morning early, the thermometer was at about 32°, and it had continued to ſnow all the night and morning. In the morning, between ſeven and eight o'clock, we approached a great many ice-iſlands, ſome of which were of vaſt extent. At eight o'clock the thermometer pointed at 31½°; it remained there when we were juſt to leeward of the largeſt of them; and, after we had paſſed it, the thermometer did not riſe higher than 31½°. I believe the cold was not leſſened, becauſe the deck being wet from the ſnow, cauſed a great evaporation, which cooled the air: and we were likewiſe every where ſurrounded by large ice-maſſes, which had ſo much cooled the atmoſphere all round, that it remained in the ſame temperature. Both theſe inſtances ſeem therefore to prove, that the ice-maſſes contribute conſiderably towards cooling the atmoſphere.

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ICE. The ice floats in an ocean, which in the ſummer of the Southern hemiſphere was obſerved to be many degrees above the freezing point; it muſt therefore continually melt and decay; and, as the difference of the ſpecific gravity of common air to freſh water is nearly as 0.001 or 0.000½ to 1.000; ſuppoſing both of the ſame temperature; it is evident that freſh water muſt melt the ice, more than common air, as the particles of water in contact with the ice are ſo much heavier; and, for the ſame reaſon as ſea-water is to freſh water as 1.030 to 1.000, ſea-water muſt act ſtill more upon the ice than freſh-water *. We had frequent opportunities of ſeeing the effect of the ſea-water upon the ice, in diſſolving and crumbling large maſſes to pieces, with a craſh not inferior to the exploſion of guns; and ſometimes we were at ſo ſmall a diſtance from them, that we were ſcarce out of the reach of the danger of being cruſhed by an ice-rock ſplitting in pieces, which were overſetting, each of them having gotten new centers of gravity. The water melted from the ice, and mixed with the ocean, muſt likewiſe cool the temperature of the ſea-water in the latitudes between 50 and 60° South, where theſe particulars were chiefly obſerved by us. It

* However large maſſes of ice require a long time and a warm climate entirely to diſſolve them. Sometimes in 40° North latitude, ice-iſlands have been met with in the Atlantic: and I have been told by an officer, who ſpent ſeveral years at and about Newfoundland, that a very bulky ice-iſland was driven into the *Streights of Belleiſle*, where it was grounded, and continued a whole ſummer, and was not entirely diſſolved before the ſummer of the next year.

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ICE.

It seems to be undeniable, that the ice we met with in the open ocean, in 50° and 67°, or even 71° South latitude, is formed still farther to the South. For it had its origin either near some land, or in the open ocean. In the first case it must evidently come from regions lying beyond the tracks of our ships, i. e. beyond 60°, 67°, and 71° South latitude, as we found no lands, where these enormous quantities of ice could possibly have been generated. Or, in the second case, if the ice be formed far from any land, this climate must likewise be farther to the South than our tracks, as we never fell in with ice, which we could with certainty consider as stationary, but, on the contrary, found it commonly in motion. At least, the loose ice between 71° and 50° South latitude, must have come from the fast, solid ice beyond 71° or some higher latitude. Other navigators *, as well as ourselves, have met with ice in low Southern latitudes, i. e. 49°, 50°, 51°, and 52°, early in the spring and summer; consequently it is evident, that it must have drifted to these low latitudes from beyond 60°, 67°, and 71° South latitude. In the Northern seas, it is a common and obvious phænomenon, observed almost every year, that the ice moves towards warmer climates. These instances, therefore, seem to prove, that there is either a strong current, an attraction, or some other cause acting

* *Dalrymple's Collection of Voyages, chiefly in the Southern Atlantic Ocean. Capt. Hall's Journal, p. 34. and Capt. Beaver's, p. 4.*

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ICE. regularly, which carries these large masses of ice from each pole towards the equinoctial line.

I should here finish these remarks on the ice, if it were not necessary to say something concerning its formation. I know that Mr. de BUFFON, * LOMONOSOF † and CRANTZ ‡ were of opinion that the ice found in the ocean, is formed near lands, only from the fresh water and ice carried down into the sea by the many rivers in Sibiria, Hudson's Bay, &c. and therefore when we fell in with such quantities of ice in December, 1772, I expected we should soon meet with the land, from whence these ice masses had been detached. But being disappointed in the discovery of this land, though we penetrated beyond the 67° twice, and once beyond 71° South latitude, and having besides some other doubts concerning the existence of the pretended Southern Continent, I thought it necessary to enquire, what reasons chiefly induced the above authors to form the opinion that the ice floating in the ocean, must be formed near land, or that an Austral land is absolutely requisite for that purpose §, and having looked for their arguments, I find they amount

* *De Buffon Histoire Naturelle*, edit. in 12mo. tom. 1. p. 313, 319. and tom. 2. p. 91. 100.

† *Lomonosof Memoire on the ice mountains of the Northern Sea*, in the *Swedish memoirs of the academy of Stockholm*, vol. XXV. Germ. edit.

‡ Crantz's history of Greenland, p. 18, 42.

§ Buffon Hist. Naturelle, tom. 1, p. 314. speaks of the Austral Lands as necessary for the formation of the ice, & tom. 2. p. 99.

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amount chiefly to this; "that the ice floating in the ocean is all "freſh, that ſalt water does not freeze at all, or if it does, it con- "tains briny particles; they infer from thence, that the ice in the "ocean cannot be formed in the ſea, far from any land; there "muſt therefore exiſt Auſtral lands; becauſe in order to form an "idea of the origin of the great ice maſſes agreeably to what is "obſerved in the Northern hemiſphere, they find that the firſt "*(point dáppui)* point for fixing the high ice iſlands is the land, "and ſecondly that the great quantity of flat ice is brought down "the rivers." I have impartially and carefully conſidered and examined theſe arguments, and compared every circumſtance with what we ſaw in the high Southern latitudes, and with other known facts, and will here inſert the reſult of all my enquiries on this ſubject. ICE.

First, *they obſerve the ice floating in the ocean to yield by melting, freſh water:* which I believe to be true; however hitherto it has by no means been generally allowed to be freſh, for Crantz † ſays expreſsly, that, "the flat pieces (forming what they call the *Ice-* "*Fields)* are ſalt, becauſe they were congealed from ſea water." The ice taken up by us for watering the ſhip was of all kinds, and nevertheleſs we found it conſtantly freſh, which proves, either that the

† Crantz's Hiſt. of Greenland, p. 31.

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ICE. the principle of analogy cannot be applied indiſcriminately in both hemiſpheres, and that one thing may be true in the Northern hemiſphere, which is quite otherwiſe in the Southern, from reaſons not yet known or diſcovered by us: or we muſt think that Crantz and others are miſtaken, who ſuppoſe the ice floating in the ocean to be ſalt.

The next remark is, *that ſalt water does not freeze at all, or if it does it contains briny particles.* Mr. *de Buffon* *, the moſt ingenious and the moſt elegant writer of Natural Hiſtory, tells us, "that "the ſea between Nova Zemla and Spitzbergen under the 79° "North latitude does not freeze, as it is there conſiderably broad, "and that it is not to be apprehended to find this ſea frozen not "even under the pole itſelf, for indeed there is no example of hav- "ing ever found a ſea wholly frozen over, and at a conſiderable "diſtance from the ſhores; that the only inſtance of a ſea entirely "frozen is that of the Black Sea, which is narrow and not very "ſalt, and receiving a great many rivers coming from Northern "regions, and bringing down ice; that this ſea therefore ſome- "times freezes to ſuch a degree, that its whole ſurface is congealed, "to a conſiderable thickneſs; and, if the hiſtorians are to be "credited, was frozen in the reign of Emperor Conſtantine Cop- "ronymus

* Ibid vol. I. p. 318.

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" ronymus thirty ells thick, not including twenty ells of ſnow ICE.
" which was lying on the ice. This fact, continues *M. de Buffon*,
" ſeems to be exaggerated, but it is true however, that it freezes
" almoſt every winter, whilſt the high ſeas which are 1000
" leagues nearer, towards the pole do not freeze, which can have
" no other cauſe than the difference in ſaltneſs and the little quan-
" tity of ice carried out by rivers, if compared to the enormous
" quantity of ice which the rivers convey into the Black Sea."
Mr. *de Buffon* is not miſtaken when he mentions that the Black Sea frequently freezes. STRABO * informs us, that the people near the Boſporus Cimmerius paſs this ſea in carts from Panticapæum to Phanagorea, and that Neoptolemus, a General of Mithridates Eupator, won a battle with his cavalry on the ice, on the very ſpot where he gained a naval victory in the ſummer. MARCELLINUS COMES † relates, that in the XIV Indiction, under the Conſulſhip of Vincentius and Fravita, in the year 401 after Chriſt, the whole ſurface of the Pontus was covered with ice, and that the ice in ſpring was carried through the Propontis, during thirty days, like mountains. ZONARAS ‡ mentions the ſea between Conſtanti-

nople

* Strabo. Geogr. Lib. vii. p. m. 212.

† Marcellinus Comes in Scaligeri edit. Euſeb. p. 37.

‡ Zonaras in Conſtantino Copronymo and Nicephorus Patr. p. 43, 44. as well as Theophanes, p. 365, 366. mention, that in the winter 763 almoſt during five months the Black Sea was covered from Zichia, (the country between the Kuban and Awchas) to Chazaria (the Crimea) and even to Bulguria with ice thirty ells thick.

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ICE. nople and Scutari frozen to such a degree, in the reign of Constantine Copronymus, that even loaded carts passed over it. The Prince DEMETRIUS CANTEMIR * observes, that in the year 16[illegible] there happened so intense a frost that the people walked over the ice from Constantinople to Iskodar. All these instances confirm Mr. *de Buffon*'s assertion; but as this great natural historian says, that the Black Sea is the only instance of a sea being entirely frozen †; I must beg leave to dissent from him, for it is equally well attested, that the Baltic is sometimes entirely frozen according to CASPAR SCHUTZ's account ‡. In the year 1426, the winter was so severe that people travelled over the ice across the Baltic from Dantzick to Lubeck; and the sea was likewise passable from Denmark to Mecklenburgh, and in the year 1459, the whole Baltic was entirely frozen, so that persons travelled both on foot and on horseback, over ice from Denmark to the Venedick Hans-towns, called Lubeck, Wismar, Rostock and Stralsund, which had never happened before; people likewise travelled across the Baltic over ice from Reval in

* Demetr. Cantemir hist. of the Othman Empire and Modern Universal History, vol. V. in fol. p. 347.

† In the year 860, the mediterranean was covered with ice, so that people travelled in carts and horses across the Ionian Sea to Venice. (*Hermannus Contractus ap. Pistor. Script.* t. II. p. 236.) And in 1234 the mediterranean was again thus frozen, that the Venetian merchants travelled over the ice with their merchandize to what place they chose, *Matth. Paris.* p. 78.

‡ Caspar Schutz Historia rerum Prussicarum. Leipzig, fol. 1599, p. 114. and 281.

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in Eſtland to Denmark and to Sweden, and back again without the leaſt danger *. But according to SÆMUND FRODE † even the great German Ocean between Denmark and Norway was frozen in the year 1048, ſo that the Wolves frequently ran over the ice from one country to the other. The great Northern Ocean is likewiſe moſt certainly ſometimes frozen to a great diſtance from any land, for MULLER ‡ relates, that in the year 1715 a Coſsack called M. MARKOFF ICE.

* In 1296 the Baltic was frozen from Gothland to Sweden. *(Incerti auctoris Annales Dener. in Weſtphalii monument. Cimbr.* t. I. p. 1392.)

In 1306, the Baltic was during fourteen weeks covered with ice, between all the Daniſh and Swediſh iſlands. *(Ludwig reliquiæ. MSStor.* t. IX. p. 170.)

In 1323, there was a road for foot paſſengers and horſemen over the ice on the Baltic during ſix weeks. *(id. ibid.)*

In 1349, people walked over the ice from Stralſund to Denmark. *(Incerti auct. cit. ap. Ludwig.* t. IX. p. 171.)

In 1408, the whole ſea between Gothland and Oeland, and likewiſe between Roſtock and Gezoer were frozen. id. ibid. 196.

In 1423, the ice bore riding from Pruſſia to Lubeck. *(Crantzii Vandal.* l. X. c. 40.) The whole ſea was covered with ice from Mecklenburg to Denmark. *(Incert. auct. ap. Ludw.* t. IX. p. 125.)

In 1461, (ſays *Nicol. Mareſchallus in annal. Herul. ap. Weſtphal.* t. I. p. 261.) Tanta erat hyems, ut concreto gelu oceano plauſtris millia paſſuum ſupra CCC merces ad ultimam Thylen, *(Iceland)* & Orcades veherentur *e Germania* tota pene bruma.

In 1545, the ſea between Roſtock and Denmark, and likewiſe between Fionia and Sealand was thus frozen, that the people travelled over the ice on foot, and with ſledges, to which horſes and oxen were put. *(Anonym ap. Ludwig.* t. IX. p. 176.)

In 1294, the Cattegat or ſea between Norway and Denmark was frozen, that from Oxslo in Norway, they could travel on it to Jutland. *(Strelow Chron. Jutbiland*, p. 148.)

Theſe hiſtorical notes were communicated to me, by Prof. Thunman at Hall in Saxony, and ſent me by the Rev. Dr. Buſhing, for which communications I return my beſt thanks.

† Sæmund Frode apud Thormod. Torfæum. Serie Dynaſt. regum Daniæ, Hafniæ 4to. 1705. p. 41.

‡ Muller's Ruſſiſche Samlungen, vol. III. p. 41.

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ICE. MARKOFF with ſome other perſons was ſent by the Ruſſian Government to explore the North Sea, but finding it next to impoſſible to make any progreſs during ſummer, on account of the vaſt quantities of ice commonly filling this ocean, he at laſt determined to try the experiment during winter; he therefore took ſeveral ſledges drawn according to the cuſtom of the country by dogs, which commonly go about 80 or 100 werſts per day, 105 of which make a degree. And on March the 15th, Old Style, with this caravan of nine perſons, he left the ſhores of Sibiria at the mouth of the river Yana, under the 71° of North latitude, and proceeded for ſeven days together Northward, ſo that he had reached at leaſt the 77° or 78° North latitude, when he was ſtopped by the ice, which there began to appear in the ſhape of prodigious mountains. He climbed up to the top of ſome of theſe ice mountains, but ſeeing from thence no land, nor any thing except ice, as far as the eye could reach, and having beſides no more food for his dogs left, he thought it very neceſſary to return, which he with great difficulty performed, on April the 3d, as ſeveral of the dogs which had periſhed for want, were employed to ſupport thoſe that remained alive. Theſe facts, I believe, will convince the unprejudiced reader, that there are other ſeas beſides the Black Sea, which really do freeze in winter, and that the ice carried down the rivers, could not at leaſt freeze the German Ocean between Norway and

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Denmark, becauſe the rivers there are ſo ſmall, and bear a very inconſiderable proportion to the immenſe ocean, which according to experiments made by Mr. Wilke * is very ſalt, though near the land, in the Swediſh harbour of Landſcrona. ICE.

Now, if ſix or ſeven degrees of latitude, containing from 360 to 420 ſea miles, are not to be reckoned a great diſtance from the land, I do not know in what manner to argue, becauſe no diſtance whatſoever will be reckoned far from any land. Nay, if the Coſſack Markoff, being mounted on one of the higheſt ice-mountains, may be allowed to ſee at leaſt to the diſtance of 20 leagues, the extent alluded to above, muſt then be increaſed to 480 Engliſh ſea-miles; which certainly is very conſiderable, and makes it more than probable, that the ocean is frozen in winter, in high Northern latitudes, even as far as the Pole. Beſides, it invalidates the argument, which theſe gentlemen wiſh to infer from thence, *that the ocean does not freeze in high latitudes, eſpecially where there is a conſiderably broad ſea:* for we have ſhewn inſtances to the contrary.

But M. de Buffon ſpeaks of ice carried down the rivers into the Northern ocean, and forming there theſe immenſe quantities of ice; "and in caſe, ſays he †, we would ſuppoſe, againſt all proba-" "bility, that at the Pole it could be ſo cold as to congeal the ſur-

 "face

* Memoirs of the Swediſh Academy. vol. 33. p. 66.

† Buffon Hiſt. Nat. tom. 1. p. 313.

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ICE. "face of the sea, it would remain equally incomprehensible, how "these enormous floating ice-masses could be formed, if they had "not land for a point to fix on, and from whence they are severed "by the heat of the sun. The two ships, which the India Com- "pany sent in 1739, upon the discovery of the Austral lands, "found ice in 47 or 48° South latitude, but at no great distance "from land; which they discovered, without being able to ap- "proach it. This ice, therefore, must have come from the inte- "rior parts of the lands near the South Pole, and we must conjec- "ture, that it follows the course of several large rivers, washing "these unknown lands, in the same manner as the rivers Oby, the "Yenisea, and the other great rivers which fall into the Northern "sea, carry the ice-masses, which stop up the streights of Wai- "gats for the greater part of the year, and render the Tartarean "sea inaccessible upon this course." Before we can allow the analogy between the rivers Oby, Yenisea, and the rest which fall into the Northern ocean, and those coming from the interior parts of the Austral lands, let us compare the situation of both countries, supposing the Austral lands really to exist. The Oby, Yenisea, and the rest of the Sibirian rivers, falling down into the Northern ocean, have their sources in 48° and 50° North latitude, where the climate is mild and capable of producing corn of all kinds. All the rivers of this great continent increasing these great

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rivers, have likewise their sources in mild and temperate climates; and the main direction of their course is from South to North; and the coast of the Northern ocean, not reckoning its sinuosities, runs in general West and East. The small rivers, which are formed in high latitudes, have, properly speaking, no sources, no springs, but carry off only the waters generated by the melting of snow in spring, and by the fall of rain in the short summer, and are for the greatest part dry in autumn. And the reason of this phænomenon is obvious, after considering the constitution of the earth in those high Northern climates. At Yakutsk, in about 62° North latitude, the soil is eternally frozen, even in the height of summer, at the depth of three feet from the surface. In the years 1685 and 1686, an attempt was made to dig a well; and a man, by great and indefatigable labour, continued during two summer-seasons, succeeded so far in this laborious task, that he at last reached the depth of 91 feet; but the whole earth at this depth was frozen, and he met with no water, which forced him to desist from so fruitless an attempt *. And it is easy to infer from hence, how impossible it is, that springs should be formed in the womb of an eternally frozen soil. But let us now compare with this, the situation of the pretended unknown Austral lands. The coast of [illegible] this

CHAP. II.

* Gmelin's Voyage to Sibiria. vol. 2. p. 520—523.

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ice. this land muſt be to the South of our navigation, in 60°, 67°, and 71° South latitude; and its direction we will allow to be Eaſt and Weſt; the courſe, therefore, of the rivers muſt be from South to North, i. e. from the interior parts of the land towards the ocean. When we came towards the 54° South latitude, we found a ſmall iſle of about 80 leagues in circumference; the thermometer continued at about 30°, 32°, and 34°, in its neighbourhood, in the midſt of ſummer; though iſles have in general a milder climate than continents, we found, however, all this country entirely covered with immenſe loads of ſnow, the bottoms of its bays were choaked up with ſolid maſſes of ice, of 60 or 80 feet above water, and we ſaw no veſtiges either of rivers or of ſprings. If this be the caſe in 54° South latitude, how can we then expect any ſprings or rivers in 60° or 71° South latitude, or rather ſtill higher up to the South, where the ſources of theſe imaginary rivers of the pretended Auſtral land, muſt be removed? It is therefore impoſſible to ſay, that the rivers of the Auſtral land carried thoſe ice-maſſes into the ocean, which we met with in ſuch ſtupendous quantities.

There is one circumſtance more, which ſurely moſt evidently proves, that there is no land in thoſe latitudes, which are ſtill capable of vegetation. In all the high Northern ſeas, there is conſtantly ſuch a prodigious quantity of wood thrown on the ſhores of all the lands,

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lands, *viz.* Nova Zemla, Spitzbergen, Greenland, Beering's-Iſland, &c. &c. that though none is growing there, the unfortunate individuals, that are obliged to ſpend a winter there, however, are ſufficiently provided with this moſt neceſſary commodity. In all the Southern ſeas, there is no drifting wood to be met with. The French ſearched a great extent of the ſhores of the Falkland Iſlands, with great care, but found not above one or two pieces of wood thrown up by the ſea; nor did we ſee any on the iſland of South-Georgia: all which ſufficiently evinces the truth of the above aſſertion. ICE.

The argument, therefore, is now reduced to this, "*That ſalt-*"*water does not freeze at all, or, if it does, the ice contains briny* "*particles.*" But we have already before produced numberleſs inſtances, that the ſea does freeze; nay, CRANTZ * allows, *that the flat pieces of ice are ſalt, becauſe they were congealed from ſea-water.* We beg leave to add a few deciſive facts relative to the freezing of the ſea. BARENTZ † obſerves in the year 1596, September the 16th, the ſea froze two fingers thick, and next night the ice was as thick again. This happened in the middle of September; what effect then muſt the intenſe froſt of a night in January not produce?

When

* Crantz. p. 31.

† Recueil des Voyages qui ont ſervi à l'Etabliſſement de la Compagnie des Indes Orientales. vol. 1.

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ICE. When Capt. JAMES † wintered in Charleton's Isle, the sea froze in the middle of December 1631: it remains therefore only to examine, whether the ice formed in the sea must necessarily contain briny particles. And here I find myself in a very disagreeable dilemma, for during the intense frost of the winter, in 1776, two sets of experiments were made on the freezing of sea-water, and published ‡, contradicting one another almost in every material point. The one by Mr. Edward Nairne F. R. S. an ingenious and accurate observer; the other by Dr. Higgins, who reads Lectures on Chemistry and Natural Philosophy, and consequently must be supposed to be well acquainted with the subject. I will therefore still venture to consider the question as undecided by these experiments, and content myself with making a few observations on them; but previously I beg leave to make this general remark, that those, who are well acquainted with Mechanics, Chemistry, Natural Philosophy and the various Arts which require a nice observation of minute circumstances, need not be informed, that an experiment or machine, succeeds often very well, when made upon a smaller scale, but will not answer if undertaken at large; and *vice versa* machines and experiments executed upon a small scale will not produce the effect,

† Histoire des Voyages, vol. LVII. edit. in 12mo. p. 421.

‡ Mr. NAIRNE's experiments are found in the *Philos. Trans.* vol. LXVI. p. 1. and *Dr. Higgins's* in a *second supplement to the Probability of reaching the North Pole.* p. 121, 142.

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effect, which they certainly have when made in a more enlarged manner. A few years ago an experiment made on the dying of ſcarlet, did not ſucceed when undertaken on a ſmall ſcale, whereas it produced the deſired effect when tried at a dyer's houſe with the large apparatus; and it evidently confirms the above aſſertion, which I think I have a right to apply to the freezing of ſalt-water. It is therefore probable, that the ice formed in the ocean at large, in a higher latitude, and in a more intenſe degree of cold, whereof we have no idea here, may become ſolid, and free from any briny particles, though a few experiments made by Dr. Higgins, in his houſe, on the freezing of ſalt-water produced only a looſe, ſpungy ice, filled with briny particles. ICE.

The ice formed of ſea-water by Mr. Nairne, was very hard, 3½ inches long, and 2 inches in diameter; it follows from thence, that the waſhing the outſide of this ice in freſh water, could not affect the inſide of a hard piece of ice. This ice when melted, yielded freſh water, which was ſpecifically lighter than water, which was a mixture of rain and ſnow water; and next in lightneſs to diſtilled water. Had the ice thus obtained, not been freſh, the reſiduum of the ſea water, after this ice had been taken out, could not have been ſpecifically heavier than ſea-water, which however was the caſe in Mr. Nairne's experiment. It ſeems therefore, in my opinion, evident from hence, that ſalt-water does freeze, and has no other

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ICE. briny particles, than what adhere to its outſide. All this perfectly agrees with the curious fact related by Mr. ADANSON *, who had brought to France two bottles of ſea-water, taken up in different parts of the ocean, in order to examine it and to compare its ſaltneſs, when more at leiſure; but both the bottles containing the ſalt-water were burſt by being frozen, and the water produced from melting the ice, proved perfectly freſh. This fact is ſo fairly ſtated, and ſo very natural, that I cannot conceive it is neceſſary to ſuppoſe †, without the leaſt foundation for it, *that the bottles were changed, or that Mr. Adanſon does not mention the circumſtance by which the ſea-water was thus altered upon its being diſſolved:* for as he expreſsly obſerves the bottles to have been burſt, it is obvious that the concentrated briny parts ran out and were entirely drained from the ice, which was formed of the freſh water only.

The ice formed by Dr. Higgins from ſea-water, *conſiſted of thin laminæ, adhering to each other weakly.* Dr. Higgins took out the frozen ice from the veſſels, wherein he expoſed the ſea-water, and continued to do ſo till the remaining concentrated ſea-water began to form cryſtals of ſea ſalt. Both theſe experiments therefore by no means prove what the Dr. intended to infer from thence; for it was wrong to take out ſuch ice, which only *conſiſted of thin laminæ, adhering to each other weakly.* Had he waited with patience, he would

† Adanſon Hiſtoire naturelle du Senegal. Paris 1757, 4to. p. 190.

* Second ſupplement, to the Probability of reaching the North Pole, p. 119.

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would have obtained a hard ice as well as Mr. Nairne, which, by a more perfect congelation, would have excluded the briny particles intercepted between the *thin laminæ, adhering to each other weakly*; and would have connected the laminæ, by others formed by fresh water. The Dr. found afterwards, it is true, thicker and somewhat more solid ice, in the vessel B: but the sea-water had already been so much concentrated by repeated congelations, that it is no wonder the ice formed in it, became at last brackish: it should seem then, that no conclusive arguments can be drawn from these experiments. ICE.

There are two other objections against the formation of the ice in the great ocean; the *first* is taken from the immense bulk and size of the ice masses formed in the ocean, which is *the deepest mass of water we know of* *. But the reader is referred to the table communicated above, where it appears, that in the midst of summer, in the latitudes of 55°, 55° 26′, and 64° South, at 100 fathoms depth, the thermometer was at 34°, 34½° and 32°; and that in all instances, the difference between the temperature at top and at 100 fathoms depth, never exceeded 4 degrees, of Fahrenheit's thermometer, or that the temperature of the air did not differ five degrees from that of the ocean at 100 fathom deep. If we now add to this, that beyond

* Dr. Higgins's experiments, in the second supplement to the Probability, &c. p. 14:.

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ICE. the 71° South, the temperature of the air and ocean muſt be ſtill colder, and that the rigours of an antarctic winter are certainly more than ſufficient to cool the ocean to 28½°, which is requiſite for congealing the aqueous particles in it; if we moreover conſider, that theſe ſevere froſts are continued during ſix or eight months of the year, we may eaſily conceive that there is time enough to congeal large and extenſive maſſes of ice. But it is likewiſe certain, that there is more than one way, by which thoſe immenſe ice maſſes are formed. We ſuppoſe very juſtly, that the ocean does freeze, having produced ſo many inſtances of it; we allow likewiſe that the ice thus formed in a calm, perhaps does not exceed three or four yards in thickneſs *; a ſtorm probably often breaks ſuch an ice-field, which Crantz allows to be 200 leagues one way, and eighty the other; the preſſure of the broken fragments againſt one another, frequently ſets one upon the other piece, and they freeze in that manner together; ſeveral ſuch double pieces, thrown by another preſſure upon one another, form at laſt large maſſes of miles extent, and of twenty, forty, ſixty and more fathoms thickneſs, or of a great bulk and height. MARTENS † in his deſcription of Spitzbergen, remarks that the pieces of ice cauſe ſo great a noiſe by their ſhock, that the navigator in thoſe regions, can only, with difficulty hear

* Crantz, p. 31.

† Martens Voyages au Nord. tom. II. p. 62.

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hear the words of thoſe that ſpeak; and as the ice-pieces are thrown one upon another, ice-mountains are formed by it. And I obſerved very frequently, in the years 1772 and 1773, when we were amongſt the ice, maſſes which had the moſt evident marks of ſuch a formation, being compoſed of ſtrata of ſome feet in thickneſs. This is in ſome meaſure confirmed by the ſtate in which the Coſack Markoff found the ice at the diſtance of 420 miles from the Sibirian coaſts. The high maſſes were not found formed, as is ſuſpected in the *SecondSupplement to the Probability of reaching the North Pole*, p. 143-145, near the land, under the high cliffs, but far out at ſea; and when theſe ice-mountains were climbed by Markoff, nothing but ice, and no veſtiges of land appeared as far as the eye could reach. The high climates near the Poles, are likewiſe ſubject to heavy falls of ſnow, of ſeveral yards in thickneſs, which grow more and more compact, and by thaws and rain, are formed into ſolid ice, which increaſe the ſtupendous ſize of the floating ice-mountains. ICE.

The *ſecond* objection againſt the freezing of the ocean into ſuch ice as is found floating in it, is taken from the *opacity* of ice formed in ſalt-water; becauſe the largeſt maſſes are commonly tranſparent like cryſtal, with a fine blue tinct, cauſed by the reflection of the ſea. This argument is very ſpecious, and might be deemed unanſwerable to thoſe, who are not uſed to cold winters, and their effects;

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ICE. fects; but whoſoever has ſpent ſeveral winters in countries, which are ſubject to intenſe froſts, will find nothing extraordinary or difficult in this argument: for it is a well-known fact in cold countries, that the ice, which covers their lakes and rivers, is often opaque, eſpecially when the froſt ſets in, accompanied by a fall of ſnow; for, in thoſe inſtances, the ice looks, before it hardens, like a dough or paſte, and when congealed it is opaque and white; however in ſpring, a rain and the thaw, followed by froſty nights, change the opacity and colour of the ice, and make it quite tranſparent and colourleſs like a cryſtal; but, in caſe the thaw continues, and it ceaſes entirely to freeze, the ſame tranſparent ice becomes ſoft and porous, and turns again entirely opaque *. This, I believe, may be applicable to the ice ſeen by us in the ocean. The field-ice was commonly opaque; ſome of the large maſſes, probably drenched by rain, and frozen again, were tranſparent and pellucid; but the ſmall fragments of looſe ice, formed by the decay of the large maſſes, and ſoaked by long continued rains, we found to be porous, ſoft, and opaque.

It is likewiſe urged as an argument againſt the formation of ice in the ocean, that it always requires land, in order to have a point upon which it may be fixed †. Firſt, I obſerve, that in Mr. Nairne's

* Marten's Recueil des Voyages au Nord. tom. 2. p. 62.

† Buffon, Hiſt. Nat. vol. 1. p. 34.

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Nairne's experiments, the ice was generated on the ſurface, and was ſeen ſhooting cryſtals downwards; which evidently evinces, in my opinion, that ice is there formed or generated where the intenſeſt cold is; as the air ſooner cools the ſurface, than the depth of the ocean, the ice ſhoots naturally downwards, and cools the ocean more and more, by which it is prepared for further congelation. I ſuppoſe, however, that this happens always during calms, which are not uncommon in high latitudes, as we experienced in the late expedition. Nor does land ſeem abſolutely neceſſary in order to fix the ice; for this may be done with as much eaſe and propriety to the large ice-mountains, which remain undiſſolved floating in the ocean in high latitudes: or it may, perhaps, not be improper to ſuppoſe, that the whole Polar region, from 80° and upwards, in the Southern hemiſphere, remains a ſolid ice for ſeveral years together, to which yearly a new circle of ice is added, and of which, however, part is broken off by the winds, and the return of the mild ſeaſon. Wherever the ice floats in large maſſes, and ſometimes in compact bodies formed of an infinite number of ſmall pieces, there it is by no means difficult to freeze the whole into one piece, for, amongſt the ice, the wind has not a power of raiſing high and great waves. This circumſtance was not entirely unknown to the ancients; and it is probable they acquired this information from the natives of ancient Gaul, and from the Britons, ICE.

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ICE. and other Northern nations, who ſometimes undertook long voyages. The Northern ocean was called by the ancients the *frozen*, the *dead*, the *lazy*, and *immoveable ſea*: ſometimes they gave it the name *mare cronium*, the concrete ſea, and *morimaruſa*, the dead ſea *. And, what is very remarkable, in all the Northern cold countries, the froſt ſometimes is ſo intenſe, that all the waters become ſuddenly coagulated into a kind of paſte or dough, and thus

at

* DIONYS. PERIEGETES. v. 32. 33.

Ποντου μεν καλεουσι ΠΕΠΗΓΟΤΑ τε, ΚΡΟΝΙΟΝ τε·
Αλλοι δ' αυ και ΝΕΚΡΟΝ εφημισαν, ουνεκ' αφαυρη
Ηελιω·

ORPHEUS Argonautic. v. 1079. 1080.

Εμπεσοι δ' Ωκεανω, ΚΡΟΝΙΟΝ δι εκεκλησκεσι
Πουτου ΥΠΕΡΒΟΡΕΗΝ μιξοντες, ΝΕΚΡΗΝ τε θαλασσαν.

STRABO, lib. ii. p. m. 71. ſays, after Pytheas of Marſeilles, that near Thule, to the North, the ſea is neither land, nor ſea, nor air, but a concrete of them all, like ſea-lungs; which plainly proves, that the famous traveller of Marſeilles had heard ſome account concerning the congelation of the ſea, which, when compared with the other accounts, and the names given to this North ſea by the ancients, are together a ſtrong proof, that the whole account originated with the Gaelic and Celtic nations; for it is in their language, that we muſt look for the meaning of thoſe names, which are found in Pliny, viz. *Morimaruſa*, the *dead ſea*; *Mor* in the Welch is the ſea, and *marw*, *dead*; ſo that *mor-marw* ſignifies the *dead ſea*; in the Iriſh, *muir-croinn* is the *coagulated*, *thick*, *concrete* ſea; (ſee TOLAND's Hiſtory of the Druids, in the Collection of ſeveral Pieces. London, 1726. 8vo. vol. i. p. 149.) So that the *Cronian* ſea was not called from Cronus or Saturn, but from its congealed, coagulated ſtate.

TACITUS, de Mor. Germ. c. 45. Trans Suionas, aliud mare *pigrum*, ac prope *immotum*——quod extremus cadentis jam ſolis fulgor in ortus edurat, adeo clarus, ut ſidera hebetet.

PLINIUS. Hiſt. Nat. lib. iv. c. 13. Septentrionalis Oceanus; *Amalchium* eum Hecataeus adpellat, a Paropamiſo amne, qua Scythiam alluit, quod nomen ejus gentis lingua ſignificat *congelatum*. Philemon *Morimaruſam* a Cimbris vocari, hoc eſt *mortuum mare*, uſque ad Promontorium Rubeas: ultra deinde *Cronium*. Et cap. 16. A Thule unius dici navigatione *mare concretum*, a nonnullis *Cronium* adpellatur.

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at once congeal *. We may therefore, with great propriety, think, that the intenſe cold in the high Auſtral regions has the ſame effect, ſuddenly to congeal parts of the ocean, eſpecially as, according to our laſt obſervations, and thoſe of other travellers, the Antarctic climate is undoubtedly colder than the Northern hemiſphere, in correſponding degrees of latitude. ICE.

The ingenious M. de Buffon † ſays, "The navigators pretend "that the continent of the Auſtral lands is much colder than that "of the Arctic Pole; but there is not the leaſt appearance that this "opinion is well founded, and probably it has been adopted by "voyagers on no other account, than becauſe they found ice in a "latitude, where it is ſeldom or ever to be met with in our "Northern ſeas; but that may be produced by ſome peculiar "cauſes." If we compare the meteorological obſervations made at Falkland's Iſlands, at about 51° South latitude, and communicated by ALEXANDER DALRYMPLE, Eſq, in his *Collection of Voyages chiefly to the Southern Atlantic Ocean*, with ſuch as are every where made in Europe, in correſponding degrees of latitude of the Northern hemiſphere; if we conſider, that in Tierra del Fuego, Staten Land, and South-Georgia, from 54° to 56° South latitude, and in Sandwich Land, in about 58° and 59° South lati-

 tude,

* See *Gmelin's Voyage to Sibiria.*

† Buffon's Hiſt. Nat. vol. 1. p. 312.

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ICE. tude, the whole land is covered with eternal ſnow to the ſhores of the ſea, in the months of December and January, correſponding to our June and July; every unprejudiced reader will find it neceſſary to allow the temperature of the Southern hemiſphere, to be remarkably colder than that of the Northern; and no one will, I believe, for the future, venture to queſtion this curious fact in the Natural Hiſtory of our Globe.

But, as the inquiſitive reader may require of me a ſolution of this curious and difficult phænomenon, I will venture to deliver my opinion on the ſubject; and hope, that if it prove not entirely ſatisfactory, it may, however, contribute towards an explanation of many things, which perhaps were not before conſidered in this point of view. Having maturely conſidered every circumſtance, I find that, with other cauſes founded on the apparent motion of the ſun, the abſence of land in the high latitudes of the Southern hemiſphere, creates this material difference in the temperature of the air, between the correſponding degrees of latitude in the Arctic and the Antarctic hemiſpheres.

In the Arctic regions, from 60° to 66½ degrees and upwards, there is much land to be met with, *viz.* Iceland, Spitzbergen, the North of Norway and Sweden, all Lapland, all the Northern parts of European and Aſiatic Ruſſia: beyond its Eaſtern extremities in Kamtchatka, are thoſe numerous iſles lately diſcovered by the Ruſſians,

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Ruſſians; and the lands of North-America, about Hudſon's and Baffin's Bay; and laſt of all, New and Old Greenland. Some of theſe lands are inhabited, and even cultivated, and bear various kinds of fruit and corn; and, during the ſhort ſummers they enjoy, there is ſometimes an intenſe heat, very little inferior to that between the Tropics. Let us now compare this with our experience in the Antarctic hemiſphere. We found no land wherever we ſailed, about 60° and upwards to the South, except the two little ſpots in the Southern Atlantic ocean. The thermometer, in the height of ſummer, in theſe high latitudes, was never five degrees above the freezing point, and we ſaw it frequently pointing below it. We often had ſnow and ſleet, and found our water in the ſkuttled water-caſk on deck, frozen during ſome nights. If all this happen in the midſt of ſummer, what muſt the condition of theſe climates be during winter? The accounts of the Spaniſh *, Dutch †, French ‡, and eſpecially of our Engliſh § navigators, relative to the temperature of the Auſtral regions about Patagonia, Tierra del Fuego, Falkland's Iſlands, and the neighbouring ſeas, perfectly correſpond with our experience. And in the Falkland's Iſlands, the thermo- ICE.

* Amerigo Veſpucci, 3d Voyage. Garcia Nodal. Sarmiento.

† Roggewein, Recueil des Voyages pour l' Etabliſſement des Indes Orientales. tom. 4.

‡ Bougainville, M. de Gennes, Frezier, Beauchefne Gouin, Bouvet.

§ Drake, Cavendiſh, Sharp, Sir John Narborough, Wood, Woods Rogers, Halley, Anſon, &c. &c.

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ICE. meter, during a whole year, did not vary, at a medium, above 20°*. It is therefore evident and beyond all doubt, that there is no large continent from 60° to 71° and upwards; and that the inconſiderable fragments exiſting there, are much colder than the lands in any correſponding Northern degree.

The ſea being a tranſparent body, the beams of the ſun penetrate a great way into it, but at laſt at the depth of about 271 feet Engliſh meaſure the rays of light do not paſs any farther, and a body of the above-mentioned height of ſea-water, becomes perfectly opaque †. Wherever therefore no bottom is to be met with at the depth of 45 fathoms, the ſea cannot reflect any beams of the ſun, which are abſorbed, and as it were ſwallowed up in the depth of the ocean: and as the reflection of the beams of the ſun chiefly contributes to the warm temperature of the air, it hence becomes evident, that ſeas of great extent, which commonly exceed 45 fathoms in depth, have never ſo warm a temperature of the air, as the lands lying under the ſame parallel; and for the very ſame reaſon, iſlands of a moderate ſize, ſurrounded by a great ocean, are not ſo hot, as large continents ſituated under the ſame parallel. To theſe particulars may be added, the famous experiment of the burning mirror, whoſe focus, when directed on a quantity of water, produces no heat, whereas

* Dalrymple's Collection, and Philoſ. Tranſ. vol. 66.

† Bouguer Eſſai d'Optique ſur la Gradation de la lumiere.

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whereas, in the ſame focus, any metal would inſtantaneouſly melt, vitrify and evaporate; nor can we omit the well known circumſtance, that the ſun moves eight days longer in the Northern, than in the Southern ſigns of the zodiac. This makes the winter eight days longer, and their ſummers eight days ſhorter; which all together muſt cool the Southern hemiſphere, by a $22\frac{1}{8}$ or very near by a 23d part more than the arctic regions. ICE.

Cuncta gelu, canaque æternum grandine tecta
Atque ævi glaciem cohibent, riget ardua montis
Ætherii facies, ſurgentique obvia Phœbo,
Duratas neſcit flammis mollire pruinas.

SILIUS ITALICUS lib. III. v. 480.

I might have been leſs prolix in regard to the obſervations on the ice, its formation and cauſes of the cold, had I not thought, that by collecting here as it were every material circumſtance, relative to the ice in the Southern hemiſphere, into one chapter, and examining what has been ſaid on both ſides of the queſtion, ſome future navigators might be better enabled to judge, how far the obſerved facts correſpond with the aſſigned cauſes. If they ſhould find reaſons to be of a contrary opinion, they will certainly be induced to publiſh the facts, upon which that opinion was founded; they will point out my miſtakes, and ſhew the cauſes of my error; in ſhort they will

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ICE. will assert truth, by which science will be benefited and human knowledge enlarged. If on the contrary, the arguments alledged in behalf of my assertions are found incontrovertible, they probably will give my arguments new support and strength, and place beyond the reach of doubt, what I have endeavoured to hint at, as the only truth. In either case, I have endeavoured to do my part, I have represented facts as they really occured to me, and on that account I hope my prolixity will be less offensive.

I might here have subjoined many other particulars relative to the ocean; I might have given some account of its currents, and of the different constitution of its bottom, where we had any soundings; of the various tides; and of the dipping and variation of the magnetical needle; but I forbear to speak on these subjects, as they are partly the objects of the nautical observations, made by the officers of ships sent on this expedition, which have been presented to the Lords Commissioners of the Admiralty, and by their command are published in Captain Cook's nautical account; and as the board of longitude, had likewise charged two astronomers, to make accurate observations on magnetism and the tides, it would therefore be very improper, to attempt a business so ably discharged by others; who with proper instruments for that purpose, more leisure, and with more command of assistance, had better opportunities of making more perfect observations on these subjects.

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CHAP. III.

Remarks on the Atmoſphere, and its Changes, Meteors, and Phænomena.

MUNDI PARS EST AER QUIDEM NECESSARIA.

SENECA.

SECT. I.

AQUEOUS METEORS.

ATMOSPHERE.

WE proceed now to the conſideration of a leſs denſe element, and its various changes and phænomena, and ſhall treat firſt, of the aqueous meteors; becauſe more cloſely connected with the former ſection.

Firſt, The climate within the tropics being very warm, and the nights rather long, the vapours raiſed in the day time by the heat of the ſun, are condenſed towards night, and fall frequently, as a *dew* on every part of the ſhip: and this we ſometimes obſerved in the midſt of the atlantic ocean, though at a great diſtance from any land. We had a few inſtances of a ſtrong dew falling in the higher latitudes, of which I will only ſelect one on January 8th, at 10 P. M. 1775; when we were ſailing between 50° and 60° and far enough from land, we found the whole deck and all the rigging moiſtened by

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by a copious dew. I am therefore inclined to believe, that a heavy fall of dew, cannot any longer be conſidered as a certain or infallible ſign of the neighbourhood of lands.

Secondly, The Tropical iſles having been viſited by us at two different times, *viz.* once from Auguſt to October, in 1773, and again from March to September, 1774, we can hardly from thence form an idea of the changes and the returns of the ſeaſons, as, each time, during our whole ſtay, the ſun was in the Northern hemiſphere: however, if we conſider that we were at O-Taheitee at the latter end of Auguſt, and again in April and the beginning of May, and that we found a very material difference in the external appearance of vegetation, we may be allowed to conclude, that this was owing to the difference of ſeaſons; for, in countries between the tropics, Nature ſeems to be more uniform and conſtant in the ſetting in of winds and rains, than without the tropics. The difference was too ſtriking not to be noticed; and, if it were not cauſed by the natural return of the ſeaſons, it muſt have been produced by a very extraordinary deviation from the uniform tenor of the changes produced within the tropics; which may be poſſible, but hardly probable.

The hills in O-Taheitee were covered in Auguſt with dry and dead herbage, a great part of it had been burnt by the natives, and gave the country a barren and dreary look. The iſle had very

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little bread-fruit, few or no apples, and the bannanas were ſcarce: and if we except the eddoes, the greater part of vegetables were but moderately plentiful, and hogs ſcarcely to be had at all. But when we arrived eight months after, in April, the hills as far as their very ſummits, were clad with the moſt agreeable verdure; the trees on the plains were bending under the weight of bread-fruit; in the valleys the largeſt apple-trees were loaded with their excellent fruit; all the ſhores fringed by innumerable coco-nut trees, offered a vaſt profuſion of theſe uſeful nuts; nay the valleys between the higher hills, were entirely covered with immenſe cluſters of the horſe-plantain, while each cottage was ſurrounded with conſiderable plantain-walks of the better ſort, richly providing a more delicious food: we obtained in a little time a great quantity of large and well taſted hogs from the natives, and ſaw every where, more left. This ſo material difference was, in my opinion, cauſed by the natural change of ſeaſons. When we came there the laſt time, the ſun had then juſt left the Southern hemiſphere; and it has been generally obſerved, that wherever the ſun is vertical within the tropics, there its powerful beams accelerate the riſing of the vapours, and cauſe a profuſion of rain; which together with the vivifying influence of the ſun, of courſe refreſhes and quickens vegetation, infuſes new life in all the animated part of nature, and produces plenty every where.

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ATMOSPHERE.

But this very idea leads me to another view of nature. O-Taheitee and all the high iſlands, are in general more happy and more fertile, than the low iſlands, and thoſe of a moderate height. The high hills in the middle of the firſt, attract by their ſituation, all the vapours and clouds that paſs near them; there are but few days, on which their ſummits are not involved in fogs and clouds; and though it does not conſtantly rain there, yet ſuch a regular ſupply of moiſture is derived from theſe hills, that their very tops are crowned with lofty trees, and their ſides fringed with ſhrubs and agreeable plants during the whole year; and all the ſurrounding valleys collect in their boſom the ſalutary humidity, which is not abſorbed by theſe plants, and which is generouſly ſcreened by them againſt the ſun's power; ſo that in every one a gentle ſtream is collected from the ſmaller rills, which unite into one bed. This rivulet the natives ſtem here and there by wears, made of large ſtones, in order to water the plantations of eddoes; the frequent trees that are growing along the banks of the ſweet purling ſtream, extend their ſhady branchs, give a coolneſs to the virgin-water, and thus bring refreſhment, and the principles of life into the plains, where the rivulet begins to meander between the rich plantations of bread-fruit, apple and cloth trees, and bannana's, and ſpreads happineſs and plenty. Theſe rivers become the fountains and chief cauſes of the great variety of fruit, which grow every where; they enliven the pictu-

reſque

resque scenery, and afford a cooling liquor for the inhabitants. Whereas the natives of the lower isles, have no other but coco-nut trees round their habitations, which thrive well in a sandy soil, and close to the sea-shore often within the reach of the spray; and the rain water preserved in deep filthy pits and ponds, full of green, slimy, aquatic plants, and stinking from its stagnation, is the only refreshing liquor they enjoy after they have been exposed on the reef (where they must resort for the fishery) to the parching sun and spray of the seas. Such is the difference in the dispensation of the salutary rains, caused by the different structure of the isles.

Though the high hills constantly attract the moisture of the clouds and cause many rains during the whole year, there is however a season, when the rains are more copious; and this was just passed, when we came the second time to O-Taheitee; for all the streams and rivulets were full of water, whereas before, they had hardly water enough to moisten the ground.

The very hills which are the cause of the fertility and happiness of these isles, produce likewise another phænomenon, viz. as they attract the rising vapours, and passing clouds of the atmosphere: the temperature of the air is thereby frequently changed, and consequently sudden gusts of winds are produced by this change, with concomitant squalls of rain; this is an intimation to navigators of the vicinity of land, as we several times experienced. We had squalls

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and lightning on the 23d, of September 1773, when we discovered Harvey's Isle. The same happened after we had passed Mopeeha or Howe's Isle on June 7th, 1774; when we fell in with the Marquesas and O-Taheitee, we had some sudden gusts of wind with rain; when we came to Tofoa one of the Friendly Isles, when we came into the vicinity of Whitsuntide isle, and during a good while, that we were about the New-Hebrides; when we came to Norfolk-Isle, and near New-Zeeland, we experienced the same sudden gusts of wind with showers of rain; all which seems to have been likewise noticed by that intelligent observer, Mr. de Bougainville *.

Thirdly, that in the course of our voyage, we should especially to the South have Fogs is very natural, from the nature of the climate, and the analogy in the Northern hemisphere; nor would it deserve any further notice, was it not for a very curious, and as far as I know, quite new observation, first kindly communicated by that great and experienced navigator, Capt. Cook, and which I afterwards had frequent opportunities of seeing confirmed, by my own experience.

If after a hard gale, with a high sea and a swell, we met with a calm, and a fog fell in at the same time, we observed that the swell, instead of gradually abating, as should be the natural consequence

* See his voyage, p. 278. and 284 of the English edition.

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quence of a calm, always increaſed; which ſeems to be cauſed by the preſſure of the atmoſphere, loaded with ſuch a quantity of aqueous particles, as is always the caſe in a fog. ATMOSPHERE.

Fourthly, The repeated approach of our ſhip to the Antarctic circle, was often announced by the fall of SNOW, SLEET, and HAIL: but the firſt year in 1772, we had ſnow very early in the latitude of 51° on December 11th. In the courſe of the following years, we never had ſnow, except when we came into the neighbourhood of that circle. However, it muſt be obſerved, this happened during the height of ſummer: what weather then muſt not the winter-ſeaſon afford? We were happy enough to meet with no land to the South; which might have ſeduced us to ſpend a cold ſeaſon ſomewhere on it, and to experience the rigors of an Antarctic winter.

Fifthly, When we were going into Queen Charlotte's Sound, in the year 1773, May 17th, we found ourſelves nearly abreaſt of Cape Stephens, between three and four o'clock in the afternoon: the wind abated gradually, and we had almoſt a calm. It had rained the day before, and blew hard all the night; and in the morning the weather had been mild, pleaſant, and warm, the thermometer ſtanding at 56½°. At a quarter after four o'clock, we obſerved to the South-Weſt ſome thick clouds; and to all appearance it rained on the Southern parts of the Cape. Immediately we ſaw a whitiſh ſpot on the ſurface of the ſea, from whence a ſtring or column roſe upwards;

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wards, while another ſoon after came down from the clouds, and joined the former. A little while after, we ſaw three more of theſe columns forming, the neareſt of which was at the diſtance of about three miles; at its baſe, where it was conſiderably the largeſt, (its diameter appearing at that diſtance to be of 70 or 80 fathom in extent) the water of the ſea was violently agitated, roſe in vapours and ſteam, and, being illuminated by the ſun, looked bright and yellowiſh, eſpecially againſt the black clouds behind; but, before the ſun ſhone out, it looked white. As theſe columns came nearer towards us down the ſtreights, we had an opportunity of examining them more particularly. Their diameter above, towards the clouds, was larger than that in their middle, which latter ſeemed not to exceed *two or three feet*. The water was whirled upwards in a ſpiral: ſometimes it ſeemed that there was a hollow ſpace within the column, and that the water formed only a cylinder; for the body of the column had, towards its axis, a hue different from the reſt, and much the appearance of a hollow glaſs tube. As theſe columns moved forwards on the ſurface of the ſea, the clouds did not follow them equally faſt; and this circumſtance gave them an oblique poſition, and ſometimes a curved ſhape. Their motions ſeemed not to be of equal velocity, nor apparently in the ſame direction; one ſeemed therefore to paſs the others, and they were viewed acroſs one another. In proportion as they came nearer to

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us, the sea appeared more and more agitated, by short, broken waves. We had then some wind, but by no means settled, for it blew in one quarter of an hour, almost from all points of the compass. The first of these four columns was the Southernmost, and lasted the longest; the Northernmost of them was the neareſt to us, and moved apparently Southward, and likewise towards us; and, as the clouds, with which the upper parts of the columns were connected, did not follow with the same velocity, with which the lower parts moved on the surface of the water, they disappeared soon after; because the columns being drawn out, as it were, to too great a length, were necessarily broken. ATMOSPHERE.

Whilst we were still observing these four water-spouts, we remarked, not above half a mile from the ship, on its starboard quarter, a spot on the sea of about 50 or 60 fathoms in diameter, more agitated than the rest. The water moved quick towards the center, in short and broken waves, and there being resolved in steam, rose up in spirals towards the clouds; but we could not so well distinguish the pillar, while it rose in this water-spout, as in the others, because the steam raised from the sea, obstructed the sight. The noise it caused, was like that of a cascade rolling down a deep glen. As this spout moved along towards the ship, it came abreast of it, and was, when neareſt, within two cables length. A few hail-stones fell during this time on deck. Soon after, another water-

ATMOSPHERE.

ſpout was diſcovered behind this laſt. A cloud of ſteam formed below, and moved upwards in a ſpiral, in a ſhape gradually decreaſing towards the ſummit. Another cloud of a long ſlender form, tapering towards its lower extremity, ſeemed to deſcend towards the riſing ſpout, and both ends united and became cylindrical and erect; but in time moving to the South-Eaſt, it aſſumed an oblique and curved form; and at laſt, when it broke, we obſerved in its neighbourhood, a flaſh of lightning, but heard no exploſion. The ſpout next us had diſappeared a ſhort time before. It was then juſt five o'clock, and the thermometer was at 54°. We had ſeveral ſhowers during the time of the appearance of the water-ſpouts, and had hauled up the courſes, and clued up the top-ſails.

After the hard gale, which had blown the ſame year, from the 22d of October, at noon, till we were off Cape Palliſer on the 29th, the gale ſtill continuing ſtrong, and the ſea turbulent, I was told by the officers of our ſhip, that in the morning-watch ſeveral water-ſpouts had been ſeen. At eight o'clock we had a ſlight ſhower of rain, and immediately after the wind changed, the thermometer being at 51½°.

From theſe facts, I beg leave to draw the following corollaries. *Firſt*, Water-ſpouts ſeem to be formed by eddies of winds, which, in their conflict, cauſe a circular motion of the air, contributing towards the raiſing of the ſea-water in ſteam; and the vacuum, cauſed

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caused by the rarefied air in the midst of the column, seems to attract the clouds, and to give them a conic shape, whose point stands downwards. ATMOSPHERE.

Secondly, From the flash of lightning, it should seem, that the clouds were then electric; and that therefore the coalition of the two tubes from the sea and the clouds, may be owing to electric attraction *.

Thirdly, Water-spouts are commonly formed near lands having projecting promontories, within narrow seas, straits, and other places where the winds form currents and eddies, and coming in conflict with other winds, take a contrary direction from the position of some promontory or strait. Those water-spouts, which Thevenot has described, were observed in the Persian Gulph, between the isles of Guésomo, Laréca, and Ormus. A friend of mine saw several in the inundated rice-fields along Canton river in China. Dr. Shaw observed some in the Mediterranean, near the

* In the *Philos. Transactions*, vol. xlvii. n. 80. p. 478. it is said, that a water-spout in Lincolnshire ended in a fiery stream. The spout, which made so great a havock at Rome, June 11th, 1749, observed by Father Boscowich, was continually emitting flashes of lightning on all sides. The spout also described by DAMPIER, vol. iii. p. 182, came out of a black cloud, that yielded great store of rain, thunder, and lightning. See Dr. FRANKLIN's *Experiments and Observations on Electricity*, 5th edit. London, 4to. 1774. p. 229 and 280. Mr. Adanson likewise observed a water-spout preceded by a thunder-storm, and found the spout extremely hot, which may be chiefly owing to the inflamed air, conveyed in this spout by an Easterly wind from the inland parts of Africa. ADANSON's *Voyage to Senegal*.

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ATMOSPHERE.

Capes Carmel, Greego, and Laodicea. Both our water-ſpouts were formed within, or near the entrance of Cook's Straits, between the two iſles of New Zeeland, among many projecting head-lands, at the mouth of ſounds and bays, extending ſeveral leagues up the country, and forming remarkable windings *.

Fourthly, Water-ſpouts are commonly obſerved in a calm, after hard gales, and ſometimes after warm, mild weather, eſpecially when the upper region of the air is remarkably cooler; for we had met with ſmart ſhowers of rain the preceding day, and it blew hard all the night before: in the morning, the violence of the wind gradually abated, and it became mild. When the water-ſpouts were juſt forming, the thermometer was at 56½°, which had been at 51½° the day before. During the time that one of them approached us, ſome hail fell, which proves the upper region of the atmoſphere to have been cooler than the lower, by 20 degrees at leaſt; and, after the ſpouts had all diſappeared, the thermometer was at 54°; conſequently even the atmoſphere below, had been remarkably cooled in three quarters of an hour.

Mr. de Buffon, vol. ii. p. 287. edit. in 12mo, finds it neceſſary, in order to account for all the phænomena attending water-ſpouts, to ſuppoſe that there is always a place under the ſea, where ſome ſubterraneous

* Whoever is deſirous of meeting with more inſtances of water-ſpouts being formed near lands, or in the eddies between two winds, may have recourſe to the *Philoſophical Tranſactions*, and Dr. *Franklin*'s above-mentioned ingenious book.

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ATMOSPHERE.

ſubterraneous fire releaſes a great deal of air, which raiſes the ſea, cauſes a bubbling and a ſmoke, and unites the clouds with the ſea, by a ſpout. But we cannot help remarking, that the vapours appeared to all of us, as ſteam raiſed by violent winds, and by no means as ſmoke produced by fire. Nay, had the place been heated by a ſubterraneous fire, the thermometer would certainly have riſen higher; but we obſerved it to fall, which clearly proved the air to have become cooler. I will only add, that the rarefaction of the air and electricity, are certainly more than ſufficient for the explanation of the various phænomena of this meteor.

Vocatur & columna, quum ſpiſſatus humor rigenſque ipſe ſe ſuſtinet. Ex eodem genere & in longum veluti fiſtula nubes aquam trahit.

PLINII *Hiſt. Nat.* lib. ii. c. 49.

SECTION II.

AËRIAL PHÆNOMENA.

AERIAL PHÆNOMENA.

Firſt, FREZIER obſerved under the tropic, at ſun-ſetting, a GREEN CLOUD; and he deſcribes it as a thing very ſingular. Thoſe who are acquainted with colours, and the various effects of their mixtures, know that green is naturally produced by mixing yellow and blue. The natural colour of the ſky, and of a great many clouds, is blue: the ſetting ſun commonly gilds all the ſky and

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AERIAL PHÆNOMENA.

clouds near the horizon, with a lively gold-yellow or orange; it is, therefore, by no means extraordinary to see, at sun-setting, a greenish sky or cloud, and it may be observed frequently in Europe. But, as the rising and setting sun causes, between and about the tropics, the tincts of the sky and clouds to be infinitely brighter than any where else, it happens now and then, that all the appearances of the sky and clouds, are more striking and brilliant, and therefore more noticed. I had an opportunity to observe, in the year 1774, April 2d, in 9° 30′ South latitude, at sun-setting, a beautiful green cloud; some others at a greater distance were of an olive-colour, and even part of the sky was tinged with a lively, delicate green.

Secondly, The refraction of light through clouds and rains, causes a RAINBOW opposite to the sun; a phænomenon which, however beautiful and striking, is so common, and the manner of its formation so well known, that it hardly requires here any particular notice: but I cannot pass by in silence, that whilst we were going, in 1773, from New Zeeland, the first time, to O-Taheitee, I had an opportunity of observing, from June 7th to July 12th, every morning constantly, a rainbow, or part of a rainbow, on the horizon. Though this remark is but trivial, it proves, however, that we had almost daily small showers of rain, and that we paid particular attention to every object which deserved observation.

The

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The fainter light of the moon cauſes likewiſe rainbows, but they are leſs noticed on account of their faint and weak colours; I obſerved one with remarkably bright colours on June 29th, 1773, another on July 6th, the ſame year, and another on March 19th, 1775, when near the Cape of Good Hope. Ariſtotle is, I believe, the firſt who obſerved this phænomenon.

Thirdly, when the air is charged with denſe vapours, and often when they are frozen into ſnow or ſleet, there appears a HALO about the ſun or moon, which is by no means remarkable upon the whole; but it has been obſerved that Halos precede high winds, ſqualls and often rain and ſnow. Though I had frequent opportunities to ſee this obſervation confirmed, I did not however always minute it down in my journal; I find only the following memorandums. On February 25th, 1774, we ſaw a large Halo about the moon, and that very night came on ſqualls with rain, and the next morning we had the ſame weather, with loud thunder claps. On January 5th, A. M. 1775, a large Halo, occupying more than 44° of the heavens, was ſeen about the ſun, dark in the middle, bright and whitiſh with ſome colours of the rainbow in the circle, and we had rain, and now and then ſqualls.

SECT.

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SECTION III.

FIERY METEORS.

FIERY METEORS

First, OUR atmosphere is not only frequently charged with aqueous particles, which are productive of different appearances and various changes of the weather, but there are besides, so many heterogeneous particles dispersed through the whole mass of the circumambient air, that we are not yet apprized of the quantity and variety of them. Accurate observers discover from time to time some new ones, and make us acquainted with their effects, when variously combined. The electric matter has been found often to be one of the curious and powerful ingredients, that enter the mixture of the atmosphere. This matter causes in various instances different phænomena. LIGHTNING and THUNDER are in all parts of the Globe caused by it. However we heard from the inhabitants of St. Helena, who were born there, and grown up to a good old age, that they never had observed a thunder storm on their happy isle. As the highest hills on it, and all the rocks surrounding it, are a kind of lava or vitrified slags of dross, which I suppose are, like all vitrescent bodies, electric *per se*, or non-conductors; the electricity of the atmosphere is perhaps not conducted by them, and causes therefore no explosion.

The

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The isles in the South-Sea are, as far as we know, subject to lightning and thunder storms; for we experienced some at different places and seasons, in the several parts of our voyage over this ocean; and we were now and then obliged to fix the electric chain, to prevent fatal accidents. Once at O-Taheitee, the man who was sent up to the main top-gallant mast head, had scarcely fixed the chain, and another man was still clearing it of the main-chains and shrouds, when the latter received an electric shock, and the fire was seen running down the chain into the water, without doing any damage. FIERY METEORS

Secondly, on August the 17th, 1772, after we had left St. Jago, at eight o'Clock in the evening, we observed a fiery meteor, of an oblong shape, a bright but bluish light, and descending towards the North West, and then moving in an oblique direction towards the horizon: its duration was momentaneous. We had about that time, frequent showers of rain, attended with sudden and violent gusts of wind, both before and after its appearance.

On the 30th of September, 1774, at half an hour after seven o'clock in the evening, after we had left the South East point of Caledonia and Pine Island, all those that were on the deck observed to the Northward, a luminous globe, of the size and brightness of the sun moving downwards with great velocity towards the horizon. Its light was pale, and it burst without any explosion whatsoever; for all the noise

FIERY METEORS

noiſe which could be heard, ſeemed to be a loud hiſſing, ſimilar to that cauſed by oakum when ſet on fire. After its burſting, ſeveral bright ſparks flew as it were from it; the lowermoſt of which had the ſhape of a pear, and could be traced by a blueiſh light it left behind. We were then becalmed, but as, according to the obſervation of ſeveral intelligent perſons, the appearance of a fiery globe, has been the forerunner of a freſh gale, I expected one; and it was really verified that very night by ſuch a gale, with ſqualls and rain. Though I am far from aſſerting that this, and perhaps a few more inſtances are ſufficient to make this rule general, I think however that if theſe phænomena and the following weather, were by future obſervers more carefully noticed, experience might lead us to ſome more general and more certain concluſions.

Thirdly, the appearance of NORTHERN LIGHTS *(Aurora Borealis)* in the higher latitudes of our hemiſphere, is at preſent a very common phænomenon; and the inhabitants of Sweden, Norway, Ice-Land and Ruſſia, have the ſight of this meteor in the winter, almoſt every clear night; but I never heard or read of any one who had ſeen the SOUTHERN LIGHTS *(Aurora Auſtralis)* before us; and though we ſpent three different ſeaſons in or near the antarctic circle, we however obſerved them the firſt time only in the year 1773, on ſeven different nights. We were at that time from 58° to 60°. South latitude, and the thermometer at eight o'Clock in

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the morning, ſtood from 31° to 33° in the open air, on deck. Their appearance was much the ſame as that of the Northern Lights; they were obſerved ſhooting up to the zenith in columns or ſtreams, of a pale light, from a dark ſegment as a baſe near the horizon, and often ſpread over the whole Southern hemiſphere; ſometimes theſe lights were ſo tranſparent, that ſtars could be obſerved through them, and at other times the ſtream ſeemed to be white and more denſe or opaque, and would not tranſmit the light of the ſtars. We ſaw the meteors on February the 18th, 19th, 20th, 21ſt, 26th, and on March 15th, and 16th. FIERY METEORS

SECT. IV. WINDS.

SOME of the moſt remarkable and general changes of our atmoſphere are produced by the winds. Their hiſtory is as yet very imperfect, and will ſtill remain ſo, for want of a ſufficient number of accurate and faithful obſervations; and becauſe mankind is ſtrongly inclined to reap the benefit of their own labours as ſoon as poſſible, without leaving it to poſterity, to make the concluſion from premiſes, for which the preſent, a ſecond, and perhaps a third age ſhould collect the materials. As ſoon as we have a tolerable number of facts before us, we begin to build thereon a ſyſtem, filling up from gueſſes, ſurmiſes and doubtful inaccurate experiments the

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WINDS. reſt of the ſtructure, which is afterwards found ſo tottering, that it ſoon either falls down, or is by adverſaries torn to pieces.

We ſhall therefore confine ourſelves to the enumeration of facts, and leave the concluſions to others, or at moſt, offer them as what they really are, conjectures.

I. REGULAR WINDS.

We found within and near the tropics the regular winds, as other navigators had done before us. In the year 1772, we left England in July, and at Cape Finiſterre, met with a North Eaſt wind, which carried us within a few degrees of the line, where, towards the latter end of Auguſt, we had rain and a S. S. W. or S. W. wind, which forced us to ſail S. E. or S. E. by E. On September 8th, when we were near the line, the wind came to the South, but in two days more it veered round to S. S. E. ſo that we could run S. W. As we approached the tropic, the wind came more round to the Eaſt to E. by N. and even N. E. and we ſtood S. E. about the end of Sept. having juſt paſſed the tropic. On the 11th, of October we could ſtand E. by S. or nearly ſo, and Eaſtward, on the 16th, the wind being N. and N. by W. On the 25th of October, we found the wind coming more Eaſtward, though now and then for a ſhort time it blew from the Eaſt, ſo that we ſailed briſkly towards the

Cape

Cape of Good Hope, and had the ſatisfaction to enter Table Bay, having had a freſh gale the preceding night. This view of the winds during our paſſage will ſhew at once the extent and the changes of the trade winds. Wherever one wind fell and another began, there we had faint breezes and calms, though of ſhort duration. WINDS.

In the year 1773, in our run from New-Zeeland to O-Taheitee, we had, on the 20th of July, a S. E. wind in about 36° South latitude, which we thought to be the trade wind, though we were ſoon undeceived, having many changes of winds after it; and we did not fall in with the true ſettled S. E. trade, till Auguſt the 7th, in about 19° South latitude; this wind blew ſometimes freſher, ſometimes fainter, eſpecially when we came near the iſles, and it carried us to O-Taheitee on Auguſt 16th.

After we left the Society Iſles, we ran towards the Friendly Iſles by help of the South Eaſt trade; though at the approach of a hard ſhower of rain and ſome lightning it ſhifted to various points; but we ſoon recovered the true trade wind, and perhaps the direction of the wind was likewiſe altered by the vicinity of ſome land; for though we ſaw no more than one low iſland in the whole run, we might paſs ſeveral, at no great diſtance, without ſeeing them, either in the night, or on account of their low ſituation; for the next year we ran a little more North of this courſe and fell in with ſeve-

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WINDS. ral isles; and this very South East wind brought us to Eaoowhe and Tonga-tabu.

The same trade wind with very little changes, carried us after leaving Tonga-tabu, out of the tropics and even to about 32° South latitude. In the year 1774, when we returned from the South to the isles, we met the South East trade wind in about 29° South latitude on the 6th of March; it continued constant while we sailed to Easter-Island and after we left it. On March 21st, at three o'clock P. M. in about 22° 45′ South latitude, the wind took us all on a sudden a-head, and we had soon after a smart shower of rain, but it was no sooner over than the trade wind returned, and blew fresh, and continued so, except in a few instances more, when we had some showers of rain. About the Marquesas we had rain and several gusts of wind.

After we left the Marquesas, we stood S. S. W. then S. W. and at last W. ½ S. and had the same S. E. trade setting us forward; now and then changing our course, on account of five low isles we fell in with, till at last we came a second time to O-Taheitee.

In our second run from the Society to the Friendly Isles, we had the same South-East trade wind, and now and then a foul West wind, when we came near land, or while a hard shower of rain was coming on, and sometimes we were becalmed. Having been a few days at A-Namocka, and passed between Oghao and Tofooa, we found

a S.

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a S. E. wind, which hindered us from going to Tonga-tabu as we originally intended; this breeze continued, with a few changes, till we fell in with the New Hebrides, where we had frequent ſqualls and rain, and ſometimes calms: We had again Eaſterly winds in going to New Caledonia, and when near it were often becalmed, with now and then a ſquall and a hard ſhower of rain. After we left New Caledonia we had the wind South, but it veered gradually to W. S. W. and W. by S. and S. on to the Weſterly quarter, where it remained, and brought us to Queen Charlotte's Sound for the third time. WINDS.

In the year 1775, when we left the Cape of Good Hope, we had a freſh South-Eaſt breeze, which now and then became ſomewhat more Eaſterly, and at laſt we were becalmed from May 10th to the night of the 13th, when the true South-Eaſt trade ſet in, and carried us to the iſlands of St. Helena, Aſcenſion, Fernando de Noronha, and to the 4th degree North latitude, where we were becalmed. From the time we left St. Helena, we had now and then ſqualls and ſhowers of rain, which were more common about the Line. The calm laſted from June 15th to the 19th, and was accompanied with hard ſhowers of rain, and ſet in with thunder and lightning. After this, we met again a breeze at North, which during the night veered to N. N. E. and N. E.; but, as we advanced farther to the North, the wind became more ſettled.

Having

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WINDS. Having paſſed the tropic of Cancer again, we found the wind became more Eaſterly, *viz.* E. N. E. and even ſometimes E. by N. Half E.; till, in 27° or 28° North latitude, we again met with the variable winds.

From this circumſtantial account, the following inferences may be drawn.

Firſt, The trade-winds extend ſometimes beyond the tropics into the temperate zones, eſpecially when the ſun is in the ſame hemiſphere; and the extent of the trade-winds within the tropics, ſeems to be proportionate to the ſun's diſtance in the oppoſite hemiſphere.

Secondly, The trade-winds in the South-Sea, are ſometimes interrupted by calms and contrary Weſterly winds; and in particular, rains and thunder-ſtorms are not uncommon at theſe changes.

Thirdly, The trade-winds are likewiſe ſometimes interrupted at the approach of land, eſpecially if it be of conſiderable height.

Fourthly, At the intervals, where one wind leaves off and the other ſets in, commonly calms, and not ſeldom rains, are to be met with.

It has hitherto been allowed, that, in the ſpace within the tropics in large oceans, the regular winds reign, which come from the Eaſt; and the cauſe of this is thought to be the ſun, which, being vertical, or nearly ſo, within the tropics at noon, rarefies the air, as his effect is then moſt powerful: but, as the ſun is every

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moment advancing to the meridian of ſome other place on the globe, WINDS.
the rarefied part of the atmoſphere of courſe moves from Eaſt to Weſt. As ſoon as the cauſe of the rarefaction ceaſes by the removal of the ſun, the columns of air in the neighbourhood of the rarefied place, ruſh in to cauſe an equilibrium. This current forms the trade-wind, and gives it continuance, within and near the tropics. The cauſe, however, is not ſo general, as that it may not be altered by ſome more powerful agent; ſuch as the vicinity of land, or a cloud pregnant with vapours and electric matter.

Though the lands in the South-Seas be of no conſiderable extent, they have however, generally, the benefit of the ſea and land-breezes; ſo that the reigning trade-wind only operates in the day-time on the windward-ſide of the iſle, and afterwards follows the direction of the ſhores, and falls every where perpendicular, or nearly ſo, upon them; nay, on the lee-ſide of the iſle, it becomes contrary to the trade, but extends only a few miles more or leſs out to ſea, in proportion to the ſize of the land and other accidental cauſes. In the night-time, the ſame wind, as it were, returns and goes out to ſea from the land, keeping within the common limits of theſe alternate breezes.

As the Eaſterly winds reign with a peculiar conſtancy within the tropics, it has been likewiſe obſerved, that, without them, the Weſterly ones are the moſt general, but their conſtancy, both in

ſtrength

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WINDS. ſtrength and direction, muſt never be compared with that of the Eaſtern trade-winds.

When we came far to the South, and were either within or near the antarctic circle, we found again, that the Eaſt winds are the moſt conſtant, and prevail the longeſt *.

If therefore, there is any dependance on theſe obſervations, it is probable that theſe Eaſterly winds are, as it were, only a kind of an eddy-wind, formed by the more general Weſtern winds in the temperate zone. So that we might, perhaps, conſider the whole in this manner: within the tropics, the great rarefaction of the atmoſphere cauſed by the heat of the vertical ſun produces the Eaſtern trade winds: this conſtant motion of the *Aërial Fluid* to the Eaſt, cauſes towards the temperate zones a kind of eddy, ſo that the winds turn gradually South and North, and laſtly Weſt, which is the prevailing winds of both the temperate zones. But this ſtreaming of the air to the Eaſt, is again in the cold frozen zones counterpoiſed by another kind of eddy wind from the Eaſt. We have already mentioned, that we wiſh that the facts we relate may

* See the Recueil des Voyages qui ont ſervi à l'établiſſement & au Progrès de la Compagnie des Indes Orientales, vol. 1. in the Third Voyage of Barentz.

See *Dalrymple's* Collection of Voyages in the Southern Atlantic Ocean, Capt. Halley's Journal, p. 52.

The ſame Eaſt wind has been obſerved by other Navigators within or near the Polar Iſles. *Barrington's* Probability of reaching the North Pole, p. 104.

Summary Obſervations and Facts, by Mr. *Valtravers* p. 20. The common current from the Eaſt is ſtrong and rapid in thoſe ſeas.

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may be distinguished from our inferences, and guesses; the former are materials towards the history of the winds on our globe; the latter are private opinions, which, though they may be condemned, may nevertheless serve as hints, towards forming a more perfect system. WINDS.

II. VARIABLE WINDS.

Though we have given a general view of the more prevailing winds in the temperate and frozen zones, we meant not by any means to say, that there are no other winds blowing in these zones; nay, we are so far from asserting this, that we will now give an instance to the contrary. When we crossed the Pacific Ocean, between 40° and 46° South latitude, in the year 1773, directing our course Eastward, we found in this run, contrary Eastern winds frequently to prevail; and what is more remarkable, when the winds again began to change, we observed four different times, between June 5th and July 5th, that they gradually went round the compass, but alway's against the sun.

About New Zeeland, we observed the winds to be for the most part Westerly, and they are often in the winter very furious.

In the seas between New Zeeland and Tierra del Fuego, in November

WINDS. vember and December, in the year 1774, we found a Weſtern wind reigning from 42° to 54° South latitude.

The neighbourhood of Tierra del Fuego, has been obſerved by other navigators, as the moſt tempeſtuous; but we found this ſea remarkably ſmooth, and the weather mild; and though we experienced a few ſqualls, they were however, by no means more violent than ſome we had met with before in other ſeas.

III. STORMS.

STORMS. We met with very little tempeſtuous weather, upon the whole, during our three years expedition; and had not any remarkable ſtorms, except twice.

When we left the Cape of Good Hope, on November the 23d, 1772, and were ſtanding to the South, we had during three weeks, very hard gales and a high ſea.

And the ſecond time, when we were running along the Eaſt coaſt of New Zeeland, towards Queen Charlotte's Sound, in October 1773, we met a hard gale, which gradually increaſed into a tempeſt; we were obliged to hand all our ſails, and to lye to under our bare poles. The ſea was long; the gale blowing off ſhore, toſſed our poor ſhip ſtrangely to and from, in a tempeſtuous ocean. The ſtorm roared in the rigging, and broke the waves againſt the ſides

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and over the decks of the ſhip. In one moment, being on the top of a mountainous wave, we could overlook an immenſe tract of this turbulent element; and with awe and terror, we beheld on both ſides, the abyſſes ſcooped out as it were by the enraged winds; another moment hurried us down between the hollow waves, and we were overwhelmed by a deluge of brine. The furious tempeſt raiſes the ſea, it breaks on the very ſummit of the wave, which by the ſtorm is diſſolved into atoms of vapours, involving the ſurface of the ocean in clouds of ſmoke and fog. Such was our ſituation, with very little relaxation for ſeveral days; and happy did we think ourſelves, after having been diſappointed ſeveral times, when, in a moderate interval, we could take refuge in the deſired port. STORMS.

CHAP. IV.

Remarks on the Changes of our Globe.

IN NOVA FERT ANIMUS MUTATAS DICERE FORMAS
CORPORA. OVID.

CHANGES OF THE GLOBE.

HAVING briefly treated of the nature of the land we met with in the courſe of our navigation, of the waters, and the conſtitution and changes of the atmoſphere, we have ſtill ſome few remarks to make on the changes our globe has undergone, both from cauſes which come on in the regular courſe of nature, and likewiſe from others which are accidental.

SECT. I.

REGULAR CHANGES.

THE conſtant ſucceſſion of ſummer and winter, of heat and cold, is in the temperate zones, in general more ſtriking and remarkable than in the torrid zone: but I may, perhaps, with equal truth aſſert, that the tropical iſles of the South Sea, enjoy more eminently than any others, an equal temperature and conſtant mild weather, by their happy ſituation in a great ocean, where conſtantly alternating ſea and land breeezes, mitigate the violence of a vertical ſun.

New

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CHANGES OF THE GLOBE.

New-Zeeland enjoys, according to the kind informations of Capt. Cook, more ſettled and more diſtinct ſeaſons, changing the temperature of the air from warm to cold. This able navigator certainly could give the beſt account of it, having paſſed in the Endeavour, about ſix months, during their ſummer, along the coaſts of New-Zeeland. We came afterwards, in March, to the ſame iſle, and remained till June; and twice we were there in October, and in November; ſo that, by this means, a very good judgment might be formed of the ſeaſons of this iſle. In its Southern parts we found in March ſtill mild weather, which continued partly in April; but in May, the tempeſtuous winds, conſtant rain, with ſleet, hail, and ſnow, and very great ſtorms of lightning and thunder, began to ſet in; the verdure every where faded, many trees ſhed their leaves, and the ſnowy ſummits of hills, attended by a piercing cold, convinced us, that the winter-ſeaſon was begun.

In the month of June, in Queen Charlotte's Sound, we found the climate milder than in Duſky-Bay; which, however, changed conſiderably during our three weeks ſtay: but, when Capt. Cook was there in the Endeavour, in 1770, he found the fineſt warm, and even hot weather, in the ſummer-ſeaſon, and every thing vegetating in the greateſt luxuriance.

We, who had ſpent our winter in the tropical iſles, and the ſpring in New-Zeeland, and felt the effects of a moſt uncomfortable ſum-

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CHANGES OF THE GLOBE.

ſummer in Tierra del Fuego and South Georgia, could not but think ourſelves completely unhappy; and a ſingle momentary recollection of the winters of thoſe wretched climates, is even now ſufficient to make us ſhudder at the very thought of it.

However, we find that theſe changes of the ſeaſon in the tropical and temperate zones, cauſe conſiderable alterations; which produce likewiſe, a very conſiderable effect upon our globe, and is infinitely more conſpicuous there, than in the more rigid climates. The conſtant ſucceſſion of vegetation within the tropics, infuſes every where life, and affords food to millions of animated beings, of the human and animal kind; the temperate zones have ſtill vegetation enough to enliven the ſcene, and to feed many thouſands; but the whole creation ſeems lifeleſs and torpid, in the frozen climates of Tierra del Fuego, and Staten Land; and the little life which is left to nature, is confined to a very ſhort ſpace of time; and even its greateſt activity, in the motion of whales, ſeals and pinguins, the only numerous inhabitants of theſe regions, is abſolute torpor, when compared with the agility of the animated beings of warmer and more happy regions. In proportion as places lie nearer to the courſe of the ſun; ſoil and mould, the great promoters of vegetation are increaſed; and in the ſame proportion all organic bodies animate the lifeleſs, chaotic part of the ſtrata of our globe. But as I have already ſpoken of theſe changes, it may be ſufficient here to hint at them only.

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SECTION II.

ACCIDENTAL CHANGES.

IF we conſider the changes our globe has undergone from accidental cauſes, we find the ARTIFICIAL CHANGES made on the ſurface of our globe by mankind, not to be the leaſt conſiderable. CHANGES OF THE GLOBE.

Where man the lord of the creation on this globe, has never attempted any change on it, there nature *ſeems* only to thrive; for in reality it languiſhes, and is deformed by being left to itſelf *. Impenetrable woods cover the ſurface of theſe regions; its trees are no doubt here and there large and fine, but many are decayed, and ſtill more lying on the ground rotting; here is a tree without its rind, another without a top; all the ground below is over-run with briars, and weeds, and climbers, which hinder you from ſetting a foot forward: all that ſeems to vegetate and thrive is ſuffocated, and buried under moſſes, lichens and muſhrooms. The water ſtagnates every where, and cauſes immenſe ſwamps, which are unfit to ſerve either the inhabitants of the land, or thoſe of the water; being over-run with gigantic but coarſe plants, affording very little food to the more uſeful parts of the animated creation.

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* Mr. de Buffon, premiere Vue de la Nature. vol. xxiv. de l'Edit. en 12mo.

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CHANGES OF THE GLOBE.

As ſoon as the lord of the creation appears in theſe regions, he eradicates all thoſe vegetables, which afford no nutriment to him, and to other uſeful animals. He opens a paſſage for himſelf and his aſſiſtants. He preſerves thoſe plants, and cultivates thoſe vegetables, which afford food, and other uſeful productions. All that is broken, decaying, and rotting, he carefully clears away, preſerving the air from putrefaction and noxious effluvia. He opens a channel for the dead, motionleſs, ſtagnating waters, which, being endued by motion, with new life and limpidity, become ſerviceable to a whole world of creatures, for whom its fluid was originally deſtined. The earth becomes dry; its rich ſoil is ſoon covered with a new verdure, forming a brilliant ſod, enamelled with the moſt fragrant flowers. Every where animals feed in theſe new meadows, which are created by the induſtry of man, and ſupported by his ingenious contrivances. The violence of the vertical ſun no ſooner begins to fade this new paradiſe, than man ſpreads, for a ſhort time, the refreſhing and ſalutary waters of the purling, limpid ſtream over its ſurface, and reſtores life and vegetation. Here a bread-fruit ſpreads its ſhady branches, and on their extremities, offers an agreeable food to its planter. The apple-tree, covered with its golden fruit, ſeems to vie with the former, in the number and agreeable taſte of its productions. There the young ſhoots of a mulberry-tree grow up luxuriantly, whoſe bark is ſoon to become

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the garment of its cultivator, and ſcreen him againſt the heat of the ſun, and the cold of the nocturnal air. How beautiful, how improved, how uſeful does nature become by the induſtry of man! and what happy changes are produced, by the moderate care of rational beings! CHANGES OF THE GLOBE.

Every one muſt perceive, though we forbore to name the countries which we have thus compared, that the former is the picture of the wilds of New-Zeeland, in the Southern iſles; and who can fail to diſcover Taheitee, the happieſt iſle of the South-Seas, in the latter repreſentation?

Among the ACCIDENTAL NATURAL CAUSES of the changes on our globe, the moſt remarkable ones are, the winds, the rains, the waters of rivers, the tides of the ocean, the currents therein, ſubterraneous fires, and earthquakes: but, as we did not ſtay long enough in the ſeveral iſles of the South-Sea, to make accurate obſervations on theſe changes, we can ſay nothing on that ſubject.

But, as we had an opportunity of ſeeing three different volcanos in the year 1774, and were for ſeveral weeks, very near to one of them, I will here inſert my remarks on that ſubject.

Two days after our arrival at Namocka, at day-break we were agreeably ſurprized by the ſight of more than 13 low iſlands, none of which we had ſeen before; beſides them, we diſcovered two high ones, the Weſternmoſt of which, conſtantly emitted great

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CHANGES OF THE GLOBE.

quantities of ſmoke. The natives call this iſle To-foòa. Two days after, we paſſed with the ſhip between it and Oghào, another high iſle, divided from the former by a narrow channel. To-foòa was covered up to its ſummit, with great quantities of clubwood (*caſuarina equiſetifolia*), and we ſaw many coco-nut trees, and ſome plantains. The natives aſſured us, there grew bread-fruit and yams on it, and that it had a run of freſh water. Its ſhores conſiſted of black rocks, that had the appearance of being burnt, and the greater part of them had the form of pillars, and were much honey-combed. The beaches were covered with a black ſand; and we found, on the ſhores of the neighbouring iſle of A-Namocka, many pumice-ſtones. The ſmoke rolled out of the ſummit of the hill in the middle of the iſle. When we came to the leeward of it, it rained, and our people on deck complained that the drops falling on their eyes produced pain and uneaſineſs; they ſmelled likewiſe ſomething like the burning of turf, or of ſome vegetables and fern; but I did not obſerve theſe two latter particulars, though I was likewiſe all the time on deck. With the rain, ſome aſhes fell down, which ſeemed to be pieces of ſmall pumice-ſtone. On the North-Weſt ſide of the iſle there was a large part of the hill, from whence the ſmoke iſſued, which appeared to be lately burnt, for it was all black, and the buſhes were without foliage and verdure, and only here and there, in craggy places and crevices, a few greens appeared.

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As we found no anchorage near this isle, and squally weather was coming on, we had no opportunity to make farther observations on this volcano. CHANGES OF THE GLOBE.

When we were in the midst of the NEW-HEBRIDES, having passed WHITSUNTIDE ISLE, we saw a large fine island to the South of it, which had all the appearance of the greatest fertility and highest cultivation. We remarked on its summit, in two places, a smoke rising, of a much greyer hue, than that from ordinary fire, which we could likewise see rising here and there on the isle, where the natives dressed their victuals. Coming afterwards to MALLICOLLO, we learned from the natives, that this isle was called AMBRRYM, and that there was a fire coming out from hills. We observed on the South-East side of the isle, which is gently sloping, and has a very beautiful appearance, white columns of smoke, rolling with great velocity and strength out of the summit of one of the inland hills, which, however, was not the highest hill on the isle. The North shores of Mallicollo were covered with pumice-stones of various sizes.

These obvious remarks on this volcano, were all that our very short stay at Mallicollo, and in its neighbourhood, would permit us to make.

The isle of TANNA was seen by us, after we left IRROMANGA. The night preceding our arrival, we observed a very great fire on

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CHANGES OF THE GLOBE.

this isle, and we saw it every now and then blazing up with great violence. In the morning we were a few miles distant from the isle, and saw plainly a volcano on its South-East side, at the end of a low range of hills, not elevated more than 120 or 150 yards above the surface of the sea; beyond which there appeared another ridge, at least as high again. It seemed not above four miles distant from the sea, and looked like a truncated cone, quite barren, of a reddish grey, and had the appearance of being formed by ashes, pumice-stones, and lava. Every four or five minutes we perceived a strait column of smoke, of a reddish grey cast, rising with great velocity and violence; and soon after we heard a rumbling noise in the volcano like that of thunder. After the smoke, or rather mass of ignited ashes, had risen to a considerable height, the resistance of the air, and its own gravitation, brought it down: it varied from the columnar shape, and branched out into separate masses, assuming a surface and out-line, not unlike a large cauliflower *. Sometimes these ashes appeared white, sometimes they had a dirty grey, and sometimes a very red cast, which happened, as I suppose, when the hot

* Nubes (incertum procul intuentibus ex quo monte: Vesuvium fuisse postea cognitum est) oriebatur, cujus similitudinem & formam non alia magis arbor quam pinus expresserit. Nam longissimo velut trunco elata in altum, quibusdam ramis diffundebatur. Credo quia recenti spiritu evecta, deinde senescente eo destituta, aut etiam pondere suo victa, in latitudinem vanescebat; candida interdum, interdum sordida, prout terram cineremve sustulerat. PLIN. *Epist. lib.* vi. *Ep.* xv.

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hot ignited aſhes were thrown up, or when the ſmoak and aſhes were illuminated by the fire at the bottom of the crater. CHANGES OF THE GLOBE.

After we came into the harbour, the volcano ſeemed to be about 6 or 8 miles diſtant, its exploſions continued for ſeveral days, and laſted ſometimes, together with the rumbling noiſe, for about half a minute: the whole deck was covered with aſhes and minute cinders, which was very hurtful to the eyes. One morning after rain, the volcano, which had ceaſed its loud exploſions, did again now and then blaze up. I obſerved this before 4 o'clock in the morning. The clouds of ſmoak which were emitted, had all the various hues from yellow, orange, red, and dark purple, dying away into a reddiſh grey, or into a darker hue. When night had ſpread its veil over all the objects ſurrounding us, the ſtars were obſerved to ſhine through ſome lucid ſpots. As often as freſh clouds of ſmoak appeared, they were illuminated from the bottom of the crater. Each neighbouring object, when expoſed to this light, was on its edges tinged yellow, orange, red, or purple. Some days after, the volcano was quiet, and no more noiſe was heard, and but few clouds of ſmoak appeared, which however, during night were illuminated.

Seven days after our firſt arrival, I made an attempt to go to the volcano, in hopes of examining this great object ſomewhat nearer; and went therefore on a path up the hill towards it. It had rained

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CHANGES OF THE GLOBE.

the night before, and we were not gone a mile up the ſides of the hill from the watering-place, when we came to a ſpot clear of wood and of reeds, where we ſaw a ſmoak or ſteam riſing from the ground: its ſmell was ſtrongly ſulphureous; and the earth was ſo intenſely hot, that we could hardly ſtand on it. The ſoil about theſe ſpiracles looked whitiſh like clay: and in other places of its neighbourhood like red ochre. The fumes riſing were real ſteams, and in all appearance not noxious to vegetation; for I obſerved ſeveral fig-trees loaded with fruit, within 2 or 3 yards of them. I traced theſe ſolfataras up the hill, in ſeveral other places, and as that day the volcano made a great many loud exploſions, we could plainly ſee, that a new quantity of vapours roſe from theſe ſpiracles after each exploſion. I traced theſe ſpiracles another time likewiſe, down the hill, within a few yards of the ſea, where at high water mark, ſeveral hot wells were found by us.

From the ſhip we obſerved, that the volcano threw up ignited ſtones of an immenſe ſize: for as we were about 6 or 8 miles off, the ſtones muſt be of a conſiderable bulk to be viſible at ſuch a diſtance. When we left the iſland, there appeared on the outſide of the volcano, among the aſhes, a ſmoaking ridge, which was not obſerved at firſt when we came into the harbour. And as I had before ſeen on a cliff near the ſea, ſome pieces of lava, it is probable this ſmoaking place, contained a ſtream of ignited ſlags, forming

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forming, when cold, the lava. All the environs of the volcano are covered with ashes, the sand on the sea shore consisted of them, and the soil on the hills was mixed with them: which I found to consist of small pieces of pumice-stone, of small portions of shining, irregularly shaped glasses, semitransparent flags of white, pellucid, irregular pieces like SHERL, or glass, of shining, fibrous, aceroſe particles like asbest; and lastly, of some black, opaque, irregular atoms. These ashes fell at the distance of 8 or 10 miles on one side or the other, according as the winds blew. From the preceding account I have reason to draw the following corollaries. CHANGES OF THE GLOBE.

First, Volcanos are not always formed on the highest mountains, but are sometimes on a lower ridge, in the neighbourhood of still higher hills. I will not deny that there may be instances, where volcanos occupy the summits of great, high mountains, but I suppose they are found both in high and low hills.

Mr. de Buffon in his most ingenious work, on the Theory of the Earth, pretends that volcanos are never to be met with but in high mountains. This assertion seems not to correspond with our experience, for a hill of about 150 yards at highest, deserves scarcely to be called a high mountain, nor are those volcanos we saw at To-fooa and Ambrrym much higher.

Secondly, A great many volcanos, if not the greater part of them, are found on isles or on the continent, at no great distance from the sea. Such are Ætna, Stromboli, Lipari, and Vulcano,

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CHANGES OF THE GLOBE.

Fuogo, the Peak of Teneriffe, Volcano Iſland, in the Queen Charlotte Iſlands, the volcanos near New Guinea, and the Moluccas, the Manillas, in Japan, Iceland, and the new diſcovered iſlands between Kamtchatka, and North America: of the latter ſort is Veſuvio, the volcanos in Kamtchatka and California: and the only ones that ſhould ſeem to make an exception, are the volcanos in the Andes, in South America and Mexico; but even there, none is above 100 miles in a ſtraight line, diſtant from the ſea. Thoſe which we found in To-fooa, Ambrrym, and Tanna, belong to the firſt claſs.

Thirdly, Volcanos are to be met with, only in countries containing a good many pyritical, ſulphureous ſubſtances. The red ochre we found on the ſides of the hill in Tanna, where the ſpiracles were ſeen by us, looked exactly like the remains of a pyrites containing ſulphur and an iron earth, which had been uſtulated and calcined in a ſtrong fire. Thoſe who have viſited the neighbourhood of other volcanos, know very well that ſuch red, ochreous ſtrata are very common in their neighbourhood.

Fourthly, We found that after rain, the volcano in Tanna began to rage and blaze more violently than before; which ſeems to imply, that the moiſture of the rain, inſinuating itſelf into the interior parts of the volcano, through various crevices and chinks, and meeting theſe pyritical ſtrata, cauſed a new fermentation, followed by new eruptions and violent exploſions.

Fifthly,

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Fifthly. Volcanos, no doubt, cauſe great changes on the ſurface of our globe, by accumulating the aſhes and pumice ſtones, which they continually emit, and by the ſtreams of lava, which often are thrown up by them and run a conſiderable diſtance, cauſing great ravages in cultivated regions: we certainly have reaſon to believe, that the whole hill where the volcano was at Tanna, had been conſiderably enlarged by the aſhes, pumice ſtones, and lava. Nay, the ſoil of the whole iſland had been altered by the continued fall of aſhes. I obſerved beſides this, a cliff to the Eaſt of the volcano near the ſea, at more than ten miles diſtance from it, which certainly contained veſtiges of a great revolution. It conſiſted of a black ſandy or gritty ſtratum, full of pumice ſtones, a great many red, ochreous ſtones, and pieces of lava. CHANGES OF OUR GLOBE.

SECTION. III.

On the DIMINUTION of the SEA and WATER.

THIS ſubject has of late been treated in various manners by the learned world. Some have endeavoured to prove, that the ſea gradually made a regular receſſion from the land, and they have corroborated this opinion, with every argument they could poſſibly deviſe. In Sweden it has been the favourite opinion of the moſt eminent philoſophers. But as all opinions may be carried DIMINUTION OF THE SEA.

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DIMINUTION OF THE SEA.

too far, ſo it has happened in this particular inſtance. One of the hiſtorians of that kingdom, Mr. DALIN, pretends that the ocean falls 45 Swediſh inches = 37 ½ Engliſh inches in 100 years, and conſequently 0,45 = 0,37 in one year: and by this means proves when Sweden firſt became HABITABLE, which he immediately conſiders as the time when it was actually INHABITED. There are others who have oppoſed this very opinion; ſo that it ſeems by no means, to be a point as yet decided; nor is it yet, as far as I am able to judge, a proper time to decide the queſtion: we are firſt to collect a great many facts, and by no means to form ſyſtems from a few particulars, which perhaps may be proved to ariſe from other cauſes, than the receſſion of the ſea; and if in one place, the ſea uncovers ſome ground, we ought likewiſe as carefully and faithfully to record the places where the ſea has made encroachments upon the land; which, if rightly compared, might ſhew, that what in one place is gained, is loſt in another. Nor do theſe gentlemen conſider, that, ſhould the ocean decreaſe, nothing but the aqueous particles would naturally be diminiſhed, and the ſaline, as fixed particles would remain, which of courſe muſt conſtantly increaſe the ſaltneſs of the ocean; and ſuch fiſh and ſubmarine animals as can now ſubſiſt in the ocean, would, in courſe of time, find themſelves in an element by no means ſuited to their life and neceſſities: nay, as their organs for ſwimming are by no means adapted

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adapted to ſo denſe a fluid, they would laſtly die, and the ocean would in a little time after, ſhoot into cryſtals of ſalt and become entirely ſolid. Rain, dew, and vapours would be formed, every century more and more ſparingly, and at laſt no vegetation or animal life could be ſupported, and would end with the ſubverſion of this our globe. DIMINUTION OF THE SEA.

I met with one inſtance only, during our expedition, where I could fairly obſerve, that the ground had been raiſed. It is well known, and often remarked in the South Sea, that the animalcules forming the lithophytes, create in the ſea curious ſtructures: they are commonly narrow below, and have as it were only one ſtalk: the more they grow, the more they ſpread above, ſo that ſome of them are found above 15 feet high, expanding from a baſe of two or three feet, to 18 or 20 on the top, but as the animalcules inhabiting theſe lithophytes, cannot live out of water, they never extend their ſtructure higher than to the waters edge, at low water mark.

When we came on the the 3d of July, 1774, to Turtle Iſland, we ſaw on the reef ſeveral ſuch lithophytes of the abovementioned heighth and ſize: they were perfectly above water, and on their ſpreading tops, ſome plants were already growing; which ſhews that they are above high water mark: and beſides this, ſhould they be now again covered by the ſea, half of the iſle, which is not very high, would certainly be drowned, with all its trees, and the

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DIMINUTION OF THE SEA.

habitations of the natives. It appears therefore evidently, either that the water had receded, or that theſe objects had been raiſed above water; but what might be the cauſe of either, I will not pretend to decide. It might be owing to the receſſion of the ſea, and its gradual yearly diminution. But an earthquake, and a ſubterraneous fire, are moſt likely to have raiſed theſe lithophytes, and parts of the neighbouring iſle above water.

SECTION IV.

The THEORY of the FORMATION of ISLES.

FORMATION OF ISLES.

HAVING thus offered a few remarks on the various changes of thoſe parts of the globe, which we viſited during our circumnavigation, I might here leave the ſubject, were it not in ſome meaſure neceſſary, to add a few obſervations, which may ſerve to eſtabliſh a theory for the formation of the tropical iſles in the South-Sea.

When we firſt came within the tropics in 1773, I applied particularly to ſtudy the conſtitution and nature of the tropical iſles. When we viſited them again in 1774, I added many more obſervations; and, after all, I found the nature of theſe iſles to be juſt ſuch as I repreſented them in the ſection, where I deſcribed the lands we had fallen in with.

We

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We found low iſles, connected by reefs of coral rocks; we met with iſlands more elevated, ſome without a reef, and others ſurrounded by a reef of lithophytes. FORMATION OF ISLES.

All the low iſles ſeem to me to be a production of the ſea, or rather its inhabitants, the polype-like animals forming the lithophytes. Theſe animalcules raiſe their habitation gradually from a ſmall baſe, always ſpreading more and more, in proportion as the ſtructure grows higher. The materials are a kind of lime mixed with ſome animal ſubſtance. I have ſeen theſe large ſtructures in all ſtages, and of various extent. Near Turtle-Iſland, we found, at a few miles diſtance, and to leeward of it, a conſiderable large circular reef, over which the ſea broke every where, and no part of it was above water; it included a large, deep lagoon. To the Eaſt and North-Eaſt of the Society-Iſles, are a great many iſles, which, in ſome parts, are above water; in others, the elevated parts are connected by reefs, ſome of which are dry at low-water, and others are conſtantly under water. The elevated parts, conſiſt of a ſoil formed by a ſand of ſhells and coral rocks, mixed with a light black mould, produced from putrefied vegetables, and the dung of ſea-fowls; and are commonly covered by coco-nut trees and other ſhrubs, and a few antiſcorbutic plants. The lower parts have only a few ſhrubs, and the above plants; others ſtill lower, are waſhed by the ſea at high-water. All theſe iſles are connected, and include a lagoon in the

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FORMATION OF ISLES.

the middle, which is full of the fineſt fiſh; and ſometimes there is an opening, admitting a boat or canoe in the reef, but I never ſaw or heard of an opening that would admit a ſhip.

The reef, or the firſt origin of theſe iſles, is formed by the animalcules inhabiting the lithophytes. They raiſe their habitation within a little of the ſurface of the ſea, which gradually throws ſhells, weeds, ſand, ſmall bits of corals, and other things on the tops of theſe coral rocks, and at laſt fairly raiſes them above water; where the above things continue to be accumulated by the ſea, till by a bird, or by the ſea, a few ſeeds of plants, that commonly grow on the ſea-ſhore, are thrown up, and begin to vegetate; and by their annual decay and re-production from ſeeds, create a little mould, yearly accumulated by the mixture with ſand, increaſing the dry ſpot on every ſide; till another ſea happens to carry a coco-nut hither, which preſerves its vegetative power a long time in the ſea, and therefore will ſoon begin to grow on this ſoil, eſpecially as it thrives equally in all kinds of ſoil; and thus may all theſe low iſles have become covered with the fineſt coco-nut trees.

The animalcules forming theſe reefs, want to ſhelter their habitation from the impetuoſity of the winds, and the power and rage of the ocean; but as, within the tropics, the winds blow commonly from one quarter, they, by inſtinct, endeavour to ſtretch only a ledge, within which is a lagoon, which is certainly entirely ſcreen-

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ed againſt the power of both: this therefore might account for the method employed by the animalcules in building only narrow ledges of coral rocks, to ſecure in their middle a calm and ſheltered place: and this ſeems to me to be the moſt probable cauſe of THE ORIGIN of all THE TROPICAL LOW ISLES, over the whole South-Sea. FORMATION OF ISLES.

We come now to the HIGHER ones. I muſt confeſs, there is hardly one of them, which had not one way or other, ſtrong marks and veſtiges left, of its having undergone ſome violent alteration in its ſurface by fire, or, as I ſhould rather ſay, by a volcano.

It is very well known, that many iſles * have been raiſed out of the ſea by the action of a ſubterraneous fire. The iſlands of SANTORINI, and the two KAMENIS †, in the Greek Archipelago, and the iſle formed in 1720, in the Weſtern Iſles ‡, are inconteſtible proofs

* Plin. Hiſt. Nat. lib. ii. c. 88, 89. lib. iv. c. 22.—Seneca Nat. Quæſt. vi. c. 21, 26. & lib. ii. c. 26.—Strab. Almeloven. p. 94, 100.—Plutarch. de Pythiæ Oraculis, ex edit. Xyland. Frft. 1620. p. 399.—Pauſan. lib. viii. c. 33.—Juſtin. lib. xxx. c. 4—Niceph. Patriarch. Brev. Hiſt. Paris, 1648. p. 37. ad ann. 727. ad eund. Theophal. Chronogr. refert. —Cedren. & Paul. Diacon. Coronelli Iſolario, p. 243. edit. Venet. 1696. fol.—Philoſ. Tranſ. vol. xxvii. No. 332.—Dio. Caſſ. lib. lx. c. 29.—Aurel. Victor. in Claudio.—Amm. Marcell. edit. Valeſ. Paris, 1681. fol. lib. xvii. c. 7.—Pindar. Ol. Ode 2.—Diod. Sic. lib. v. c. 55.—Heraclid. Pont. de Polit. Græc. ad calcem Cragii, de Rep. Laced.—Philo Jud. de Mundi incorrupt. p. 959.

† Nouveaux Memoires des Miſſions. tom. i.—Philoſ. Tranſ. vol. xxvii. n. 332.

‡ Gaſſendi de Vita Epicuri. vol. ii. p. 1050.—Hiſt. de l'Acad. de Paris, de 1721. p. 26. & 1722. p. 12.—Philoſ. Tranſ. abridg. tom. v. ſect. ii. p. 154. Comment. Bonon. tom. i. p. 205.

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proofs of it. Theſe ſeem to have been a kind of volcano coming out of the bottom of the ſea. We viſited iſles that had ſtill volcanos; others, that had only elevation, and marks of being formed in remote ages by a volcano; and laſtly, we found iſles, that had no remains of a volcano, but even ſtrong and undoubted veſtiges of having been violently changed, and partly overturned by an earthquake, ſubteraneous fire, and a volcano. TOFOOA, AMBRRYM, TANNA, and PICO, are of the firſt claſs. MAATEA, O-TAHEITEE, HUAHEINE, O-RAIEDEA, O-TAHAW, BOLA-BOLA, MOURUA, WAITAHU, or St. Chriſtina, and the reſt of the MARQUESAS, with ſeveral of the NEW-HEBRIDES, and FAYAL, belong to the ſecond; and I cannot help referring EASTER-ISLAND, ST. HELENA, and ASCENSION to the laſt.

I will not from hence inſiſt, that all the iſles now enumerated, were originally produced by earthquakes and volcanos, but I may venture to aſſert this of ſeveral, from their external appearance, and of others I am certain, that they exiſted above water, before they had a volcano, and were entirely changed, and partly ſubverted by ſubterraneous fire.

ASCENSION, in the Atlantic Ocean, an iſle which we ſaw laſt, after all the others, furniſhed me with ſome very curious and pertinent remarks on the ſubject. We anchored in Croſs-Bay, and ſaw the higheſt hill of the iſle at about five miles diſtance from the

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shore: it consists of a gritty lime-tophus, mixed with marle and sand. Some parts of this stone being decayed by length of time, form, together with a little mould, the surface, which is covered with purslane, and some grasses. The nature of this hill is, in every respect, different from the rest of the isle, especially about Cross-Bay. For, as soon as we had reached the elevated plain, situated between the bay and the hill, which is a-breast of the bay, we found it about two miles in diameter, covered with black, gritty slag-ashes, and in some places with a dusky yellow ochre. At sixty or eighty yards distance, the plain is all over incumbered with little hummocks, about ten or twenty feet high, formed of very rugged slags and porous cinders; in short, of lava. All this plain is inclosed by several hills, of a conic form, and of a reddish-brown or rusty-coloured cast, consisting entirely of small ashes, and gritty dissolved slags; some of which are black, and others of an ochreous nature, and of a yellow or red colour. On one side of the plain is an elevated ridge of rocks of the most craggy appearance, lying in very irregular masses, and terminating in the most curious manner, in points and sharp prominencies. Part of this ridge we could trace towards the sea, where the slags, if possible, assumed still more horrid shapes, intersected by deep gullies, forming a tremendous, inaccessible shore. The slags or lava ring like bells; and, if a piece of it be broken and thrown down the sides of these steep craggy masses, it produces a sharp clanging sound. At the very

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first sight of these objects, nothing is more obvious to every beholder, than that the high peak in the middle of the isle, is one of the primogenial lands, whereof, perhaps, the whole isle consisted before its present desolation. The elevated plain seems to have been the crater of the volcano; the conic hills were probably thrown up by the cinders and ashes. The ridge of slags is the stream of lava, and some of it ran probably towards the sea. The elevated hummocks in the plain, are the masses of slags and lava, such as they remained after the action of the volcano ceased. They have gradually decayed, and this, together with the foreign matters, washed down by violent rains from the hills of ashes and cinders, have contributed to fill the crater up, and make its surface level. It seems therefore to follow, that Ascension was originally a land or island; but, when the volcano was formed in its bosom, part of it was entirely changed and destroyed, and now shews nothing but nature in ruins:

——————— *nec restat in illa,*
Quod repetas; tantum cinis, & sine semine terra est.

CORN. SEVERUS.

ST. HELENA has on its outside, especially where the ships lye at anchor, an appearance, if possible, more dreadful and dreary than Ascension; but the farther you advance, the less desolate the country appears; and the most interior parts are always covered with plants, trees, and verdure: however there are every where the most evident

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evident marks, of its having undergone a great and total change from a volcano and earthquake, which perhaps ſunk the greateſt part of it in the ſea. FORMATION OF ISLES.

EASTER-ISLAND, or WAIHU, is another iſland of the ſame nature. All its rocks are black, burnt, and honey-combed: ſome have perfectly the appearance of ſlags; nay, even the ſoil, which is but thinly ſpread over the burnt rocks, has the appearance of a dark yellow ochre. We found a great many black glaſſy ſtones, ſcattered among the great quantity wherewith the whole iſle is covered, which are known to mineralogiſts by the name of Iceland-agate, and are always found near volcanos, or places expoſed to their violence: thus, for inſtance, they abound in Italy and Sicily, and in Iceland near the volcanos, and likewiſe in Aſcenſion. We found the whole iſle very poor in vegetables; and, though I walked over a great part of it, I found no more than about twenty plants, including thoſe that are cultivated, and no trees at all, which is very remarkable in an iſle of this extent, under ſo fine a climate, and inhabited for a long time paſt: for, when Roggewein firſt diſcovered it in 1722, he even then found thoſe ſtone pillars, which we likewiſe ſaw, and which ſeemed to us to have been erected many years ago. The writers of Roggewein's voyage ſaw likewiſe woods on this iſle; it ſhould therefore ſeem, that ſince that time, ſome diſaſter had befallen this ſpot, and ruined the woods, and thrown down many

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of the huge ſtone pillars, for we found ſeveral on the ground. Perhaps this happened in 1746, when Lima and Callao ſuffered ſo much by an earthquake; nor is it uncommon for earthquakes to extend their power a great way. Capt. Davis, in the year 1687, being 450 leagues from the main of America, felt an earthquake very ſtrongly, when at the ſame time its moſt violent effects were obſerved at Lima and Callao.

But I will, by no means, inſiſt upon the circumſtance, that the iſle was full of woods and foreſts in Roggewein's time, upon the mere authority of theſe writers, as a corroborative proof of any changes, which I ſuppoſe this iſle to have undergone; for one of theſe writers at leaſt ſeems to contradict his own report, by telling us, that the man who came on board, had a canoe made of ſmall pieces, none of which was above half a foot in length; which we found really true, and is very natural, becauſe they have no wood: but unluckily, upon the whole, the hiſtory of the giants twelve feet high, deprived him entirely of the character of a faithful hiſtorian. And, beſides this, we found the figures or ſtone pillars, all made of a porous tufa, which had undergone a violent operation by fire. Theſe pillars were already exiſting in Roggewein's time; conſequently the iſle, its ſtones, and ſtrata, had already undergone the violence of fire; ſo that it evidently appears, that whatever changes the iſland has undergone, muſt have been anterior to Roggewein's arrival

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arrival there in 1722. However, it was obvious to every one, that the isle had been subject to the violence of a volcano, which had perhaps destroyed a part of it. FORMATION OF ISLES.

But the tropical isles in the South-Seas bear likewise the most undeniable marks of violent changes from fire and earthquakes; though their present cultivated state, the fine mould covering their surface, and the various vegetables on it, partly hide the vestiges of these revolutions, and require therefore the eye of a man used to these enquiries, and acquainted with nature in its various states. The excavated tops of the peaks of MAIATEA, BOLA-BOLA, and MOURUA, the spires and shattered rocks of the interior parts of TE-ARRABOO, or the little peninsula of O-TAHEITEE, together with the honey-combed black rocks and lava of TOBREONOO and the MARQUESAS, are such proofs of these revolutions, as nobody will dispute, who is well acquainted with the subject, and has formerly examined the neighbourhood of volcanos. Nay, all the New-Hebrides, the Marquesas, and Society-Isles, together with the Azores or Western-Isles in the Atlantic, have all more or less, the same marks of those great changes, which they have undergone in former ages. But if we remember, that earthquakes and subterraneous fires have in all ages raised isles from the depth of the ocean; if we read the accounts of the origin of THERASIA and HIERA, or SANTERINI and VOLCANELLO, of the two KAMENIS,

of

FORMATION OF ISLES.

of an isle between Tercera and St. Michael; if we compare the strata and structure of these new isles, and of some in the Atlantic, and the South-Seas; if we recollect, that some of these isles have still volcanos, and that others are still subject to earthquakes; we cannot help suspecting, that these isles might probably have had the same origin, by being raised from the bottom of the ocean by a fire, or, as I may call it, a sub-marine volcano. The O-TAHEITEANS and inhabitants of the Society Isles seem to be very well acquainted with earthquakes. Their mythology acknowledges a God, called O-MAOOWE, whom they think to be the God and Creator of the sun, and who in his anger shakes the earth, and causes earthquakes; which they express by the phrase O-MAOOWE TOORORÉ TE WHENNOA, (i. e.) Maoowe shakes the earth; which certainly seems to me to prove, that they are not quite strangers to this tremendous phænomenon.

I must not assert that the foregoing observations, make it certain that these isles were raised by earthquakes and fire; but I think the opinion probable; nor do I imagine that all the high isles, were thus thrown up by fire and earthquakes, from the bottom of the sea. Many of them may have existed before, nay, they have perhaps constituted greater lands, and were only dismembered by the sinking of the intermediate parts: and as we have already once entered into the land of fables and mythology, I must beg leave

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to return again to it. The natives of the Society Iſles, pretend their iſles were produced when O-Maoowe dragged a great land from Weſt to Eaſt through the ocean, which they ſtill imagine to be ſituated to the Eaſtward of their iſlands: all that time they ſay, their iſles were broken off as little fragments, and left in the midſt of the ocean. This tradition ſeems to indicate, that the inhabitants themſelves have ſome idea of a great revolution, which happened to their iſles. The god of earthquakes, mentioned before, proves, that they ſome how refer the preſent condition of their iſles, to a great earthquake as a general cauſe: and the great land they remember, and of which their iſles are fragments, ſeems to imply, that they have not forgotten that their habitations formerly were parts of a great continent, deſtroyed by earthquakes, and a violent flood, which the dragging of the land through the ſea ſeems to indicate.

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CHAP.

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CHAP. V.

ORGANIC BODIES.

OMNIS NATURA VULT ESSE CONSERVATRIX SUI, UT & IN GENERE CONSERVETUR SUO.
M. Tullius Cicero de Fin. Bon. & Mal. l. 4.

ORGANIC BODIES.

THE next article which demands our attention in the lands of the South Sea, is the hiſtory of the organic bodies, which partly form, and partly dwell on their immediate exterior ſurface. They conſtitute the vegetable and animal kingdoms in the ſyſtem of nature, the latter being diſtinguiſhed from the firſt, by the powers of perception, or the ſenſes, the peculiar attributes of animal being.

SECTION I.

VEGETABLE KINGDOM.

THE vegetation which cloaths our earth, VARIES conſiderably in every country we met with during our circum-navigation, even as the appearances of the lands themſelves, are new and ſingular in almoſt every one of them. Between the tropics, we met with the Low Iſlands, conſiſting of mere coral rocks, ſcarce covered with ſand. The Society Iſles of vaſt height, ſurrounded by rich

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plains, and included in coral reefs: and many other cluſters of mountainous iſlands, deſtitute both of reefs and plains. We have obſerved how much the leaſt attractive of theſe tropical countries, ſurpaſſes the ruder ſcenery of New Zeeland: how much more diſcouraging than this, are the extremities of America; and laſtly, how dreadful the ſouthern coaſts appear, which we diſcovered. In the ſame manner, the plants that inhabit theſe lands, will be found to differ in number, ſtature, beauty, and uſe. VEGETABLE KINGDOM.

LOW ISLES.

The Low Iſlands which are diſperſed in the Pacific Ocean between the tropics, are of an inconſiderable ſize, and conſequently produce few ſorts of plants: however, the great abundance of coco-nut palms on them, gives them a pleaſing aſpect at a diſtance; ſome trees and ſhrubs that flouriſh on the ſhores; a few antiſcorbutic ſimples, and ſome plants which have the quality of intoxicating fiſh, compoſe their whole Flora.

SOCIETY ISLES.

But nature and art have united their efforts in the Society Iſles, to ſtrike the beholder with the magnificence of proſpects, and to awaken every idea of beauty, by the variety of harmonious forms and colours. They conſiſt of plains, hills, and a high range of

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VEGETABLE KINGDOM

mountains, in each of which, vegetation is different. The plains which encircle theſe iſles, give greater room for cultivation than mountainous expoſures: in conſequence of this, we ſee them and the remoteſt extremities of the vallies which run between the hills, covered with plantations; we find them inhabited by a numerous race, in a higher ſtate of civilization than any of their neighbours; we enter a country improved by art, and from the rough walks of uncultivated nature, paſs into the lovely variety of a flouriſhing and well kept garden; the ground is no longer loaded with heaps of putrid branches and leaves, that give nouriſhment to briars, climbers, ferns, and the whole tribe of paraſite plants; but a bed of graſſes adorns the whole ſurface, and forms that luxuriant ſod, which is always the effect of cultivation. The fruit trees riſe at proper diſtances from each other, and the ſhade which their foliage throws, ſhelters the green turf below, which the rays of a tropical ſun would otherwiſe ſoon ſcorch and deſtroy. The dwellings of the natives have the ſame advantage, being generally ſituated in the midſt of a group of trees, and frequently ſurrounded with various ſhrubs. The firſt range of hills that riſe within the plains are entirely deſtitute of trees, by which means, the ſun having full ſcope to operate, permits no graſſes or other tender plants to grow there, ſo that the whole is covered with a very dry kind of fern,

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among which, two ſorts of ſhrubs are diſperſed that can equally ſupport the utmoſt fury of a vertical ſun. VEGETABLE KINGDOM

As we advance higher, we find the ſides of the hills beginning to be wooded, and at laſt arrive at the higheſt ſummits, which are wholly covered with foreſts of very tall trees. As theſe tops are frequently involved in clouds, the temperature of the air is very mild, and cauſes all kinds of vegetables to thrive with luxuriance. Among the reſt, moſſes, ferns, epidendra, and the like, which particularly delight in moiſture, cover the trunks and branches of the trees, and over-run the ground.

MARQUESAS.

To the North Eaſtward of the Society Iſles, lie thoſe iſlands which Mendanna named the Marqueſas de Mendoza. They might be aptly compared to the Society Iſles, if theſe laſt were deſtitute of reefs and of plains. The Marqueſas are alſo more wooded, though the variety of plants is not, by far, ſo great, owing to the room which the plantations take up in the woods themſelves.

FRIENDLY ISLES.

Next to the Society Iſles for richneſs of productions, and beauty of appearance, we muſt place that group diſcovered by the Dutch navigator Taeſman, and not unaptly to be diſtinguiſhed by the

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VEGETABLE KINGDOM

name of Friendly Iſles, from the peaceable, kind diſpoſition of their inhabitants. They are raiſed ſo high above the level of the ſea, that they can no longer rank with the Low Iſlands; and being deſtitute of mountains, they are equally diſtinct from the High Iſlands. They are extremely populous, their uniform ſurface therefore, gives the people an opportunity of carrying cultivation very far; and from one end to the other, they are interſected by paths and fences, which divide the plantations. At firſt one might be apt to think that this high cultivation, would give the botaniſt very ſcanty ſupplies of ſpontaneous plants; but it is the peculiar beauty of all theſe elegant iſles to join the uſeful to the agreeable in nature, by which means a variety of different wild ſpecies thrive among thoſe that are cultivated, in that pleaſing diſorder which is ſo much admired in the gardens of this kingdom.

NEW HEBRIDES.

The more Weſtern iſles named the New Hebrides, appear with a very different vegetation. They are high and mountainous, without plains or reefs, though their hills have gentle ſlopes, and their valleys are extenſive: they are fertile, and almoſt totally covered with foreſts, in which, the plantations of the natives, are ſo many inſulated ſpots, eſpecially as the number of inhabitants is but ſmall for the ſize of the iſles. The ſpontaneous plants there-

fore

fore, occupying the greateſt ſpace, the variety of ſpecies is alſo greater here, than in the more Eaſterly iſlands. VEGETABLE KINGDOM

NEW CALEDONIA.

The arid ſoil of New Caledonia, totally diſtinct from all others in the South Sea, produces nevertheleſs, a variety of plants, moſt of which form *genera* very diſtinct from thoſe before known. A reef of coral rocks ſurrounds the ſhores here at a conſiderable diſtance, in the ſame manner as at the Society Iſles, and the only cultivated parts of the country, are likewiſe ſome narrow plains. But it ſeems, that though the natives beſtow great labour on them, yet they barely yield them a ſcanty ſubſiſtance, which probably, is the cauſe of their very inconſiderable number. From the unanimous teſtimony of ſeveral gentlemen, who made the voyage in the Endeavour Bark, as well as this laſt in the Reſolution, we have the greateſt reaſon to aſſert, that the productions of this large iſland, (the plains excepted) entirely reſemble thoſe of the coaſts of New Holland, which are not far diſtant.

NEW ZEELAND.

New Zeeland, which lies in the temperate zone, preſents a very different aſpect from any of the tropical countries. Its northern iſle though mountainous, like the other, has however very extenſive

VEGETABLE KINGDOM

five ſlopes, which the natives have known how to turn to advantage by culture; but as we never landed on that part, we ſhall confine ourſelves to the Southern iſle, at each of whoſe extremities we touched. The proſpect here conſiſts of ſeveral ranges of mountains, one higher than another, the higheſt capt with ſnow: their ſides are ſteep, their valleys narrow, and the whole covered with immenſe foreſts. The only difference between the Northern and Southern ends of the iſle, conſiſts in this, that the latter ſtill degenerates into ruder rocks; whilſt the former in ſome places has level ſpots, clear of wood, and covered with graſſes, ruſhes, &c. The climate of this iſle is ſo temperate, that all ſorts of European garden plants (which we had ſown) vegetated very luxuriantly in the midſt of winter: the indigenous Flora is therefore very prolific, and the variety of genera and new ſpecies conſiderable: but as the country has probably, never ſince its firſt exiſtence, undergone any changes from the hand of induſtry: its foreſts are perfect labyrinths, which innumerable climbers, briars, and ſhrubberies, twining together, render almoſt wholly impenetrable, whilſt they in great meaſure prevent every herbaceous plant from coming up: theſe laſt therefore, are only found on the beaches, along the edge of the valley, and are almoſt entirely compoſed of antiſcorbutics and pot-herbs.

TIERRA

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TIERRA DEL FUEGO.

VEGETABLE KINGDOM

STILL, as we advance to the South, the appearance of countries becomes more and more barren. Tierra del Fuego, at the South extremity of America, always labours under the rigors of cold, and all its Weſtern coaſts are barren, rocky mountains, whoſe tops are continually covered with ſnow. In a bay where we anchored to the North-Weſt of Cape Horn, we found ſcarce any traces of vegetation, except on ſome low little iſles, whoſe thin turf, which covered the rock, was quite marſhy; and in the loweſt bottoms of vallies, or the crevices of mountains, where ſome ill-ſhaped, wretched ſhrubberies were to be found, ſcarce ever growing to ſuch a height, as to deſerve the name of trees. All the higher parts of the mountains are black rocks, perfectly naked. In the ſmall catalogue of plants, we however find the celery, which Providence has diſtributed ſo univerſally, as one of the beſt remedies againſt the ſcurvy. The North-Eaſt ſide of Tierra del Fuego, ſlopes into a kind of plain, and looks more rich in vegetables; but we did not land upon it.

NEW GEORGIA.

WHEN we ſaw the barren ſide of Tierra del Fuego, we had ſcarce an idea of a more wretched country exiſting; but after ſtanding ſometime to the Eaſtward, we met with the iſle of New-Georgia, which,

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VEGETABLE KINGDOM

which, though in the same latitude, appeared so much more dreadful, that before we came close up with it, it was suspected to be an island of ice. The shapes of its mountains are, perhaps, the most ragged and pointed on the globe; they are covered with loads of snow in the height of summer, almost to the water's edge; whilst here and there, the sun shining on points, which project into the sea, leaves them naked, and shews them craggy, black and disgustful. We landed in Possession-Bay, and found the whole Flora to consist of two species of plants, one a new plant * peculiar to the Southern hemisphere, the other a well-known grass; both which, by their starved appearance and low stature, denoted the wretchedness of the country. However, as if nature meant to convince us of her power of producing something still more wretched, we found land about four degrees to the Southward of this, apparently higher than it, absolutely covered with ice and snow (some detached rocks excepted) and in all probability incapable of producing a single plant. Wrapt in almost continual fogs, we could only now and then have a sight of it, and that only of its lowest part, an immense volume of clouds constantly resting on the summits of the mountains, as though the sight of all its horrors would be too tremendous for mortal eyes to behold. The mind indeed, still shudders at the idea, and eagerly turns from so disgusting an object.

I. NUM-

* Anicstrum. *Foster's Nova Genera Plantarum*, p. 3. 4.

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I. NUMBER OF SPECIES.

VEGETABLE KINGDOM.

FROM what has been ſaid, it appears, that the rigorous froſt in the antarctic regions almoſt precludes the germination of plants; that the countries in the temperate zones, being chiefly uncultivated, produce a variety of plants, which only want the aſſiſtance of art to confine them within proper bounds; and laſtly, that the tropical iſles derive a luxuriance of vegetation from the advantage of climate and culture. But the number of vegetables is likewiſe commonly proportioned to the extent of the country. Continents have therefore, at all times, been remarkable for their immenſe botanical treaſures; and, among the reſt, that of New-Holland, ſo lately examined by Meſſrs. BANKS and SOLANDER, rewarded their labors ſo plentifully, that one of its harbors obtained a name ſuitable to this circumſtance, (Botany Bay.) Iſlands only produce a greater or leſs number of ſpecies, as their circumference is more or leſs extenſive. In this point of view, I think both New-Zeeland and the tropical iſles rich in vegetable productions. It would be difficult to determine the number in the firſt with any degree of preciſion, from the little opportunities we had of examining its riches: our acquiſitions of new ſpecies from thence amount to 120 and upwards; the known ones, recorded already in the works of Linnæus, are only ſix, and conſequently bear a trifling proportion

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to the new ones; but there is great reaſon to ſuppoſe that, including both the iſles of New-Zeeland, a Flora of no leſs than 400 or 500 ſpecies, on a careful ſcrutiny, might be collected together; eſpecially if the botaniſt ſhould come at a more advanced ſeaſon than the beginning of ſpring, or not ſo late as the beginning of winter; at which times we had the only opportunities of viſiting this country.

In the tropical iſles, the proportion of new and known ſpecies is very different. All our acquiſitions of new ones from them amount to about 220 ſpecies; and the collection of the known or Linnæan, to 110, which gives the whole number 330; and ſhews, that one third were well known before. Cultivation contributes not a little towards this becauſe it probably contains ſuch plants, as the firſt ſettlers of theſe iſles brought with them from their original Eaſt-Indian ſeats, which of courſe are moſt likely to be known; and, with theſe cultivated ones, it is to be ſuppoſed there might come the ſeeds of many wild ones, alſo of Eaſt-Indian growth, and conſequently known to the botaniſts. The new plants, therefore, can only be thoſe which originally grew, peculiar to theſe countries, and ſuch as have eſcaped the vigilance of the Europeans in India.

The number of individual ſpecies (330) which we found in the tropical iſles, (old and new) is by no means to be conſidered as a perfect

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perfect Flora, for which purpose, our opportunities of botanizing were greatly insufficient. On the contrary, I am rather inclined to think, that our number might almost be doubled on a more accurate search, which must be the work of years, not of a few days, as was the case with us. The greatest expectations are from the New-Hebrides, as they are large, uncultivated, but very fertile islands. The jealous disposition of their natives would not permit us to make many discoveries there; yet, from the out-skirts of the country, we might form a judgment of the interior parts. As an instance, that we often have had indications of new plants, though we could never meet with the plants themselves, I shall only mention the wild nutmeg of the isle of Tanna, of which we obtained several fruits, without ever being able to find the tree. The first we met with was in the craw of a pigeon, which we had shot, (of that sort, which, according to Rumphius, disseminates the true nutmegs in the East-India islands): it was still surrounded by a membrane of bright red, which was its mace; its color was the same as that of the true nutmeg, but its shape more oblong; its taste was strongly aromatic and pungent, but it had no smell. The natives afterwards brought us some of them. Quiros must have meant this wild nut, when he enumerates nutmegs among the products of his Tierra del Espiritù Santo. This circumstance gives a strong proof (with many more of another nature) of the veracity of

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this famous navigator; and, as he likewiſe mentions ſilver, ebony, pepper, and cinnamon among the productions of Tierra del Eſpiritù Santo, and the iſles in the neighbourhood, I am inclined to believe, that they are really to be met with there.

Another material obſtacle to our compleating the Flora of the South-Seas, and which indeed is connected with the former, ariſes from the changes of ſeaſons: for though, between the tropics, they be not ſtrongly marked with the alternatives of heat and cold, yet, according to the approach or receſs of the ſun, vegetation is more or leſs active. This we experienced, by touching at ſome of the iſles, two different times, after an interval of ſeven months. The firſt was in Auguſt (1773) or the height of the dry ſeaſon; when we found every thing wearing a yelloviſh or exhauſted colour; many trees had ſhed their leaves, and few plants were in flower. The ſecond time, being in April (1774), ſoon after the rainy, or at the beginning of the dry ſeaſon, we were ſurprized beyond meaſure by the lively hues which now appeared in thoſe very objects, that had ſeemed as it were dead at our firſt viſit: we found many plants which we had never ſeen before; obſerved many others in flower, and every thing covered with a thick foliage of a freſh and vivid green: and from this circumſtance, and the longer time we ſpent at the Society Iſles, our collections from thence are the moſt perfect. It is true, the difference of dry and rainy ſeaſons is not ſo ſtrongly

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ſtrongly marked as on continents, or in iſles contiguous to them; eſpecially as fruits of all kinds chiefly ripen during the wet months, which would be impoſſible, were the rains conſtant; and ſecondly, ſince even the dry months are not wholly exempted from ſhowers: but the relative diſtinction holds notwithſtanding, as the proportion of rain in one, is conſiderably greater than in another. VEGETABLE KINGDOM

It is owing to the exceeding ſmall ſize of the low iſles, that their vegetable productions are ſo inconſiderable; though I muſt confeſs, we never landed on any one without meeting with ſomething new. SAVAGE-ISLE, which is in fact no more than a low iſland, raiſed ſeveral feet above water, and clearly manifeſts its origin, by the bare coral rocks of which it conſiſts, has ſome new plants, which, in the out-ſkirts of the iſle, grew in the cavities of the coral without any the leaſt ſoil. We might have made ſeveral acquiſitions on this iſland, but the ſavage diſpoſition of the natives forced us to abandon it. As a contraſt to the tropical iſles, we ought to mention Eaſter-Iſland, which lies ſo little without the tropic, that it may well be claſſed with thoſe iſles which are actually included in it. This iſle is either groſſly miſrepreſented by the Dutch diſcoverers, or has ſince then been almoſt totally ruined. Its wretched ſoil, loaded with innumerable ſtones, furniſhes a Flora of only 20 ſpecies; among theſe, ten are cultivated; not one grows to a tree, and almoſt all are low, ſhrivelled and dry. In the oppoſite, or Weſtern-

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Weſternmoſt part of the South-Sea, lies a ſmall iſle, which has obtained the name of Norfolk-Iſland: almoſt its whole vegetation correſponds with that of New-Zeeland, whoſe North end is not far diſtant from it; only ſome allowances muſt be made for the greater mildneſs of the climate, which gives every plant a greater luxuriance of growth. Peculiar to this iſle, and to the Eaſtern end of Caledonia, we found a ſpecies of coniferous tree, from the cones probably ſeeming to be a cypreſs: it grows here to a great ſize, and is very heavy but uſeful timber.

II. STATIONS.

As the South-ſea is bounded on one ſide by America, on the other by Aſia, the plants, which grow in its iſles, partly reſemble thoſe of the two continents; and the nearer they are either to the one or the other, the more the vegetation partakes of it. Thus the Eaſternmoſt iſles contain a greater number of American, than of Indian plants; and again, as we advance farther to the Weſt, the reſemblance with India becomes more ſtrongly diſcernible. There are, however, ſingular exceptions to this general rule: thus, for inſtance, we find the *gardenia* and *morus papyrifera*, both Eaſt-Indian plants, only in the Eaſterly groupes of the Friendly and Society Iſles; the TACCA of Rumph, which is likewiſe an Indian ſpecies, is only found in the Society Iſles. On the other hand, ſome

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ſome American ſpecies do not appear till we reach the Weſtern Iſles, called the Hebrides, which are however the fartheſt removed from that continent. Part of theſe exceptions are perhaps owing to the inhabitants, who, being of a more civilized nature in the Eaſterly iſles, have brought ſeveral plants with them from India, for cultivation, which the others have neglected. The ſame circumſtance alſo, accounts for the arrival of the ſpontaneous Indian ſpecies in theſe Eaſternmoſt iſles; they being probably, as I have already obſerved, brought among the ſeeds of the cultivated ſorts. In confirmation of which, it may be alledged, that the Indian ſpecies are commonly found on the plains in the Society Iſles, and the ſpontaneous American ſpecies on the mountains.

A few plants are common to all the climates of the South Sea; among theſe is chiefly the celery, and a ſpecies of ſcurvy graſs (Arabis) both which are generally found in the low iſlands between the tropics, on the beaches of New Zeeland, and on the burnt iſlands of Tierra del Fuego. Several other ſpecies ſeem to have obviated the differences in the climate by a higher or lower ſituation: a plant, for inſtance, which occupies the higheſt ſummits of the mountains at O-Taheitèe, (or any of the Society Iſles) and grows only as a ſhrub, in New Zeeland is found in the valley, and forms a tree of conſiderable height; nay the difference is ſenſible in different parts of New Zeeland itſelf: thus a fine ſhrubby tree at Duſky Bay

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Bay or the Southern extremity, which there grows in the loweſt part of the country, dwindles to a ſmall inconſiderable ſhrub at Queen Charlotte's Sound, or the Northern end, where it is only ſeen on the higheſt mountains. A ſimilarity of ſituation and climate ſometimes produces a ſimilarity of vegetation, and this is the reaſon why the cold mountains of Tierra del Fuego produce ſeveral plants, which in Europe are the inhabitants of Lapland, the Pyrenees, and the Alps.

III. VARIETY.

The difference of ſoil and climate, cauſes more varieties in the tropical plants of the Southern iſles, than in any other. Nothing is more common in the tropical iſles, than two, three, four, or more varieties of the ſame plant, of which, the extremes ſometimes, might have formed new ſpecies, if we had not known the intermediate ones, which connected them, and plainly ſhewed the gradation. In all theſe circumſtances, I have always found that the parts moſt ſubject to variation, were the leaves, hairs, and number of flower ſtalks, (pedunculi) and that the ſhape and whole contents of the flower (partes fructificationis) were always the moſt conſtant. This however, like all other rules, is not without exceptions, and varieties ariſing from ſoil ſometimes cauſe differences even there, but they are too ſlight to be noticed. A cold climate, or a high

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exposure shrinks a tree into a shrub, and vice versa. A sandy or rocky ground produces succulent leaves, and gives them to plants, which, in a rich soil have them thin and flaccid. A plant which is perfectly hairy in a dry soil, loses all its roughness, when it is found in a moister situation: and this frequently causes the difference between varieties of the same species in the Friendly Isles, and in the hills of the Society Isles: for the former, not being very high, are less moist than the hills of the latter, which are frequently covered with mists and clouds. VEGETABLE KINGDOM

IV. CULTIVATION.

THAT cultivation causes great varieties in plants, has been observed long since, and can no where be better seen than in the tropical South Sea isles, where the bread-fruit tree *(artocarpus communis)* alone, has four or five varieties; and the DRACÆNA TERMINALIS Linn. two; the TACCA, in its cultivated state, has quite a different appearance from the wild one, and the plantane, or *musa paradisiaca*, varies almost *in infinitum* like our apple. The vegetable kingdom furnishes the natives of the tropical lands in the South Sea, with the greatest part of their food, their clothing, their dwelling, furniture, and every convenience. In New Zeeland, the natives live chiefly on fish, and the spontaneous plants furnish them with

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veſtments, ſo that they care not (eſpecially in the Southern iſland) to have recourſe to agriculture. The plant of which they make all their clothing, fiſhing lines, cords, &c. is a new genus, which we have called PHORMIUM, and properly belongs to the natural order of the *coronariæ*, which it cloſely connects with the *enſatæ* or flags. But in the tropical iſles, where the climate ſoftens what is ſavage in human nature, and as I may ſay naturally leads to the civilization of mankind, the people are fond of variety of food, of conveniencies at home, and of neatneſs and ornament in dreſs; hence it happens that they cultivate (one iſland with another) almoſt fifty different ſpecies, beſides making uſe of ſeveral that are ſpontaneous. The little trouble which agriculture is attended with, and the great advantages which ariſe from it in the Society and Friendly Iſles, are the reaſons why the number of plants cultivated in thoſe iſles, ſo much exceeds thoſe of the others. In the more Weſterly iſles of the New Hebrides, the country being very woody every where, it became a more difficult taſk to till the ground; for this reaſon, only ſome of the moſt neceſſary plants are ſelected there for cultivation, and we find the manners of the people, more unpoliſhed, and ſavage. New Caledonia ſeems to be but a refractory ſoil, and therefore the few inhabitants on it, can barely procure a ſubſiſtence at the expence of much toil and labour.

V. CLASSES

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V. CLASSES AND SEXES.

It is an obſervation of a very remote date, that cultivation often takes from plants the power of propagating by ſeed: this is clearly ſeen in moſt of the plantations of the iſles, and more eſpecially in the bread-fruit tree, where the ſeeds are ſhrivelled up, and loſt as it were, in a great quantity of farinaceous pulp; * in the ſame manner it alſo happens in the plantane, which ſometimes hardly preſerves the rudiments of ſeeds. † The O-Taheitee apple, which contains a hard capſula, commonly has no ſeeds in the loculaments or diviſions; the gardenia, hibiſcus and roſa ſinenſis almoſt conſtantly bring flowers where the number of petals is multiplied, and neither of them have ſeed. But the cloth tree or morus papyrifera, is the moſt extraordinary of all, inaſmuch as it never bloſſoms in theſe iſles; the reaſon is obvious, for the natives never ſuffer it to grow till the time of flowering comes on, as the bark would then be unfit for their purpoſe. The great fertility and

 exuberance,

* Mr. *Sonnerat* found in the Philippines likewiſe the bread-fruit tree wild, and as this plant had there not undergone ſo many changes from cultivation, it bears ripe ſeeds, of a conſiderable ſize, which he has delineated and engraved.

† Mr. Banks, it is ſaid, met with one kind of the muſa wild in New Holland, which there bore and perfected its ſeeds.

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exuberance of the ſoil in ſome of the tropical iſles, is perhaps one of the reaſons why ſuch a number of their plants belong to the Linnæan claſſes of monoecia, dioecia, and polygamia, and it is remarkable that plants which botaniſts have obſerved to be hermaphrodites in America, here bear their male and female flowers on two diſtinct ſhrubs, and this may confirm the opinion, that moſt dioicous plants, are ſomewhere or other alſo found in the hermaphrodite ſtate; which, if it were general, would entirely ſet aſide that claſs: it has likewiſe often been thought that it would be an improvement to the ſexual ſyſtem, if the claſſes of monoecia and polygamia were expunged, and their genera placed according to the number of ſtamina; but, if we conſider how many of them would fall to the ſhare of ſuch claſſes as are already numerous, it muſt be obvious, that this would only render the ſcience more intricate. The number of five, according to the great Linnæus's obſervation, is the moſt frequent in nature, (Phil. Bot. 60). Hence the claſs of pentandria is ſo crowded with genera; and hence alſo our acquiſitions chiefly belong to it. It was with a kind of regret, that we ſaw ſo many plants accumulating to the increaſe of that claſs, which was already too extenſive; as this circumſtance ſeemed to haſten the overthrow of the ſexual ſyſtem, it contributed to make us extremely cautious in creating new genera. Thoſe claſſes, which in Europe are

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the moſt copious, the *umbellated*, the *Syngeneſia*, the *Papilionaceæ*, the *Bicornes*, the *Siliquoſæ*, the *Perſonatæ*, and the *Verticillatæ*, have very few congeners in the tropical iſles; the beautiful claſſes of *Enſatæ*, *Coronariæ*, *Sarmentaceæ*, are equally rare. The *graſſes* are not numerous, and are chiefly of the claſs of Polygamia. The *Piperitæ*, *Scitamineæ*, *Heſperideæ*, *Luridæ*, *Contortæ*, *Columniferæ*, and *Tricoccæ*, chiefly compoſe the Flora of theſe iſles. Among the *Orchideæ*, a great variety of Epidendra inhabit the uncultivated parts. Moſt of them are new, and their flowers ſo very various, that they could be diſtinguiſhed into ſeveral different genera, with the ſame eaſe that botaniſts have ſeparated the *Convolvulus* and *Ipomæa*, or the *Nyctanthes* and *Jaſminum*, only from ſlight differences in the formation of the flower. The ſpecies of Convolvuli are very copious in the South-Sea iſles, and ſo cloſely connected with each other, that it becomes very difficult to determine them. The genus of peppers (*piper*) has been placed among the diandria by Linnæus; though he has taken the greateſt part of its ſpecies upon the authority of PLUMIER. We had opportunities of examining many ſpecies of it, and always found the number of ſtamina irregular and indeterminate, and the ſhape and number of ſtigmata different in almoſt every ſpecies: it is therefore but juſt, that this genus ſhould be reſtored to the claſs GYNANDRIA, where it properly belongs, and with which its fructification perfectly agrees. But, allowing

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allowing, even that ſome ſpecies of pepper regularly have two ſtamina to each germen, this cannot be ſufficient to remove them out of the claſs; ſince we ſee the *Arum ſeguinum*, *macrorhizon*, and *eſculentum*, the *Dracontium*, and the *Pothos*, which have all either four, ſix, or ſeven ſtamina regularly round each germen, ſtill continue in the claſs *Gynandria Polyandria*.

This is an abſtract of the obſervations, which we were able to make on the claſſification of plants, and of the claſſes which are chiefly found in the iſles of the South-Sea. I ſhall only add, concerning the deſcriptions or definitions of the known ſpecies in Linnæus, that we have found them, in general, very exact in the American plants, but more inaccurate in thoſe of the Eaſt-Indies; a circumſtance, which I can only attribute to the following cauſe: The American plants have had the good fortune to be examined and deſcribed in their native ſoil, by the moſt expert botaniſts of the preſent age; the late favourite diſciple of Linnæus, Peter Loefling; the great and conſummate obſerver, Jacquin; Dr. P. Browne; Mr. Juſſieu, &c. On the contrary, the Indian plants are chiefly known from herbals, and the more inaccurate, unfaithful, and unſcientific accounts of the botaniſts of the laſt age; for we can hardly expect much from the few opportunities, which the diſciples of the great father of botany have had, of ſnatching up a few plants, as they have been chiefly confined to the voyage to China;

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during which they ſeldom go aſhore, and much leſs make any ſtay in places, which are worthy the attention of the curious obſerver. And this circumſtance likewiſe ſhews, how much that immenſe part of our globe, India, with its iſles, wants the labours of a new, accurate, and modern obſerver, accompanied by a faithful draughtſman, uſed to drawings of natural hiſtory, in order to make us better acquainted with the rich treaſures of theſe extenſive regions; and it raiſes a wiſh in each patriotic breaſt, that, as the Britiſh empire in India is ſo extenſive, ſo much reſpected, and its ſubjects there ſo wealthy and powerful, that ſome of them would engage men capable of ſearching the treaſures of nature, and examining the ſeveral objects of ſciences and arts in theſe climates. VEGETABLE KINGDOM

Before I conclude this article, I ſhall only add a word or two on the received opinion, that ſea-weeds are certain indications of land. I ſhall not need to mention the immenſe beds of weed, which are annually found in the midſt of the Atlantic ocean, to diſprove this aſſertion, ſince I can have recourſe to an ocean infinitely broader, namely, the South-Sea in the temperate zone, which is at leaſt 1500 leagues broad from New-Zeeland to America, in which ſpace, we are now well aſſured, there is no land, though we ſaw from time to time bunches of weeds in every part of it. Indeed, nothing is ſo probable, as that ſome weeds never take root, but grow floating on the water, as other aquatic plants do. But, ſuppoſing this

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VEGETABLE KINGDOM

were not the caſe, nothing is more eaſily to be conceived, than that the almoſt conſtant ſtrong Weſterly winds in that part, may detach theſe weeds, and carry them over all the ocean. If this laſt circumſtance were well aſcertained, it is moſt likely, that the weeds once torn up, begin from that time to decay, and a kind of random-gueſs of the vicinity of land, might be formed upon the bare inſpection of the ſtate of the weeds.

SECTION. II.

ANIMAL KINGDOM

ANIMAL KINGDOM.

THE countries of the South Sea, and the Southern coaſts, contain a conſiderable variety of animals, though they are confined to a few claſſes only. We have ſeen by what degrees nature deſcended from the gay enamel of the plains of the Society Iſles, to the horrid barrenneſs of the Southern SANDWICH LAND. In the ſame manner the animal world, from being beautiful, rich, enchanting, between the tropics; falls into deformity, poverty, and diſguſtfulneſs in the Southern coaſts. We cannot help being in raptures, when we tread the paths of O-Taheitean groves, which at each ſtep ſtrike us with the moſt ſimple, and at the ſame time the moſt beautiful proſpects of rural life; preſenting ſcenes of happineſs and affluence

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affluence to our eyes, among a people, which, from our narrow prejudices we are too readily accuſtomed to call ſavage. Herds of ſwine are ſeen on every ſide; by every hut dogs lie ſtretched out at their eaſe, and the cock with his ſeraglio, ſtruts about, diſplaying his gay plumage, or perches on the fruit trees to reſt. An unintermitted chorus of ſmall birds warbles on the branches all the day long, and from time to time, the pigeons cooe is heard with the ſame pleaſure as in our woods. On the ſea ſhore, the natives are employed in dragging the net, and taking a variety of beautiful fiſh, whoſe dying colours change every moment: or they pick ſome ſhells from the reefs, which, though well known to the naturaliſt, yet have a right to the the philoſopher's attention, who admires the wonderful elegance of nature alike, in her moſt common as in her rareſt productions. To enhance the ſatisfaction we feel, this happy country is free from all noxious and troubleſome inſects; no waſps, nor moſquitoes, infeſt the inhabitants, as in other tropical countries; no beaſts of prey, nor poiſonous reptiles ever diſturb their tranquility *.

Let us remove from hence to the temperate zone: what a falling off from the ſoft ſcenes of domeſtic quiet, to the wilds of New-

* The common flies are, indeed, at ſome ſeaſons troubleſome, on account of their immenſe numbers, but they cannot be called *noxious* inſects: the only diſagreeable animal in O-Taheitee is the common black rat, which is very numerous there, and often does miſchief by its voracity.

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ANIMAL KINGDOM

Zeeland! The rocky mountains, the foreſts, yea, human nature itſelf, all look ſavage and forbidding. The animal creation are already leſs happy than between the tropics, and hawks and owls, the tyrants of the wood, prey upon the weak and defenceleſs: ſtill however the whole country rings with continual ſongs, of which the ſweetneſs, emulates that of our firſt ſongſters. But as we advance to the South, and croſs an immenſe ocean, in the midſt of which we ſee ſome lonely birds, ſkimming the waves, and collecting an uncertain ſuſtenance; we arrive at the South-end of America, and view a barren coaſt, inhabited by the laſt and moſt miſerable of men, and but ſcantily clad with low and crooked ſhrubs: we find a number of vultures, eagles, and hawks, always hovering about, upon the watch for prey: and laſtly, we obſerve that the greateſt part of the other birds live gregarious in a few ſpots; whilſt the rocks are occupied by a race of ſeals, which in compariſon with the reſt of animals, ſeem monſtrous and miſſhapen.

The claſſes of birds and fiſhes, are the only numerous ones in the countries which we have viſited: thoſe of quadrupeds and inſects are confined to an exceeding ſmall number of well known ſpecies. Thoſe of cetacea, amphibia and vermes, are likewiſe not numerous, and the two firſt epecially contain ſcarce any thing new.

QUA-

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QUADRUPEDS.

In the tropical iſles they have but four ſpecies of quadrupeds, two of which are domeſtic; and the remaining ones are the vampyre and the common rat. This laſt inhabits the Marqueſas, Society-Iſles, Friendly-Iſles, and the New-Hebrides; it is alſo found at New-Zeeland; but whether it may not have been tranſported thither by our ſhips is uncertain; at New-Caledonia, however, it has never been ſeen. Rats are in incredible numbers, at the Society-Iſles, and eſpecially at O-Taheitee, where they live upon the ſcraps of meals, which the natives leave in their huts, upon the flowers and pods of the erythrina corallodendron, upon plantanes and other fruits, and for want of theſe, on all ſorts of excrements; nay, they are ſometimes ſo bold, as to be ſaid to attack the toes of the inhabitants whilſt they are aſleep. They are much ſcarcer at the Marqueſas and Friendly-Iſles, and ſeldom ſeen at the New-Hebrides.

The vampyre *(veſpertilio vampyrus)* which is the largeſt known ſpecies of bat, is only ſeen in the more Weſtern iſles. At the Friendly-Iſles they live gregarious by ſeveral hundreds, and ſome of them are ſeen flying about the whole day: I found a large caſuarina-tree, hung with at leaſt 500 of them in various attitudes, ſome by the hind and others by the fore-feet. They live chiefly

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on fruits: they ſkim the water with wonderful eaſe, and though we ſaw one ſwimming, I think this ſingle fact, gives me no right to pronounce them expert ſwimmers. It is known that they frequent the water, in order to waſh themſelves from any filthineſs or to get rid of vermin which might accidentally ſtick to them. Their ſmell is ſomewhat offenſive. When irritated they bite hard, but are for the reſt quite inoffenſive. In Tanna there are, beſides theſe larger bats, myriads of a minute ſpecies, which we ſaw and heard, but never could obtain for examination. At New-Caledonia the natives uſe the hair of the great bats in ropes and in the taſſels to their clubs; and they interweave it among the threads of the graſs (*cyperus ſquarroſus*,) which is made uſe of for that purpoſe.

The two domeſtic quadrupeds are the hog and the dog. The Society-Iſles alone are fortunate enough to poſſeſs them both: New-Zeeland and the low iſlands muſt be content with dogs alone; the Marqueſas, Friendly-Iſles, and New-Hebrides have only hogs; and Eaſter-Iſland and New-Caledonia are deſtitute of both. The hogs are of that breed which we call the Chineſe, having a ſhort body, ſhort legs, belly hanging down almoſt to the ground, the ears erect, and very few thin hairs on the body: their meat is the moſt juicy, and their fat the moſt agreeable and the leaſt cloying I ever taſted, which can only be attributed to the excellent food they are uſed to; conſiſting chiefly of the bread-

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fruit or its four paſte, yams, eddoes, &c. They are very numerous at the Society-Iſles, where you hardly paſs a houſe that is without them, and frequently meet with ſome that keep a great number. There is likewiſe abundance of them at the Marqueſas and a conſiderable number at Amſterdam, one of the Friendly-Iſles; but they are more rare at the Weſtern-iſles of the New-Hebrides. The dogs of the South Sea iſles are of a ſingular race: they moſt reſemble the common cur, but have a prodigious large head, remarkably little eyes, prick-ears, long hair and a ſhort buſhy tail. They are chiefly fed with fruit at the Society Iſles; but in the low iſles and New Zeeland, where they are the only domeſtic animals, they live upon fiſh. They are exceedingly ſtupid, and ſeldom or never bark, only howl now and then; have the ſenſe of ſmelling in a very low degree, and are lazy beyond meaſure: they are kept by the natives chiefly for the ſake of their fleſh, of which they are very fond, preferring it to pork; they alſo make uſe of their hair, in various ornaments, eſpecially to fringe their breaſt plates in the Society Iſles, and to face or even line the whole garment at New Zeeland.

Beſides the dog, New-Zeeland boaſts four other quadrupeds, one is the rat, the other a ſmall bat, reſembling that deſcribed in Mr. Pennant's Synopſis of Quadrupeds, No. 283, under the name of New-York bat; the third is the ſea-bear, or urſine ſeal, Penn. Syn. Quad. No. 27,

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No. 27, (*Phoca urſina.* Linn.) and the fourth, the animal which Lord Anſon calls a Sea-lion, (*Phoca leonina.* Linn. leonine ſeal, P. S. Q. No. 272) Some ſailors on board the Reſolution, affirmed they had ſeen a little quadruped at Duſky Bay, in New-Zeeland, of the ſhape of a fox or jackal; but as we never on our frequent excurſions in the woods, met with any thing of this kind, nor have, on the moſt careful enquiry, found that any gentleman who had viſited New-Zeeland in the Endeavour, had ever ſeen ſuch an animal, we are of opinion, (eſpecially conſidering the tranſient manner in which, and the time when this was ſeen, being in the dawn of the morning) that it muſt have been a miſtake. As the Southern coaſts which we ſaw, have both theſe ſeals, and another cogeneric animal, beſides the ſeal with a mane, (*Phoca jubata*) all in greater number, and ſize, I ſhall now mention them together. It is an obſervation of the great naturaliſt M. de Buffon, that the large animals in the creation, are all to be conſidered as ſo many genera (eſpèces iſolées) to which we can refer no other ſpecies; and to prove the truth of this, he mentions the inſtances of the elephant, rhinoceros, tapir, hippopotamus, and giraffe, which are really ſo many genera, to which only one ſpecies belongs: and adds likewiſe the cabiai, the beaver, and the lion.

We ſhall mention a circumſtance making againſt his aſſertion: the ſpecies of ſeals in the antarctic hemiſphere, are as large as moſt

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moſt quadrupeds on the globe, except the elephant and rhinoceros. But two of them, which undoubtedly are diſtinct ſpecies, can hardly be defined, unleſs by the colour and menſural difference. One of theſe is the urſine ſeal, the other the jubated ſeal. This laſt is mentioned, and deſcribed by the great zoologiſt, the late M. Steller, in his account of the animals of Beering's iſles, near Kamtchatka: there is alſo a tolerably good account of this animal in Don Pernetty's voyage to the Malouines or Falkland Iſles: they both call it the ſea lion; a name given to it with the greateſt juſtice, as its anteriors bear a great reſemblance to the lion, which its ſhaggy mane and tawny colour helps to ſtrengthen, while Lord Anſon's ſea lion with its wrinkled noſe, has not the leaſt ſimilarity with it.

As there is not one animal entirely new, among the eight quadrupeds of the South Sea, it may ſeem to indicate that this claſs is already more compleat than is generally ſuppoſed; but what we have already obſerved in regard to plants, holds good equally in the animal kingdom: for never were ſmall iſlands known to abound with a great variety of quadrupeds. It is from the interior parts of Africa, India, and perhaps too of New-Holland, that we muſt expect thoſe ſupplies to the ſcience, whenever the munificence of princes ſhall enable the naturaliſts, ever ready to undergo fatigue and hardſhips, for the ſake of diſcovery, to ſearch the hidden treaſures of thoſe vaſt continents.

CETA-

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CETACEA.

The cetaceous animals which we saw in the South Sea, are the fin fish, (*Balæna physalis*, Linn.) the bottle nosed whale, the grampus, the porpesse, and the dolphin of the antients. The two last are seen all over the ocean from the line to the antarctic polar circle. We had no opportunity of examining any but a female of the dolphin, (*Delphinus Delphis*, Linn.) which we found perfectly to answer to the accurate descriptions of the various zoologists. It was struck with the harpoon, and we feasted on it with as much, or perhaps more appetite, than they did in the time of Dr. Caius. (*See Mr, Pennant's British Zoology*, vol. 3. p. 63. edit. in 4to.)

BIRDS.

The birds of the South Sea, and of Tierra del Fuego, are numerous, and form a considerable variety of species; among which are two genera entirely new, and a third hitherto confounded with several others (the pinguin.) They live secure in every bush, and on every tree, undisturbed for the greatest part by the inhabitants; they enliven the woods with their continual songs, and contribute much to the splendor of nature by their varied plumage. It is a received notion that birds of many colours do not sing well, but not to mention the common goldfinch, which is perhaps, one of the most

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most beautiful birds in nature, and has a very melodious note, we have numerous instances here to the contrary. The wild forests of New Zeeland, and the cultivated groves of O-Taheitee, resound alike with the harmony of the shining songsters. There is only one tame species of birds, properly speaking, in the tropical isles of the South Sea, *viz.* the common cock and hen; they are found numerous at Easter Island, where they are the only domestic animals: they are likewise in great plenty at the Society Isles, and Friendly Isles, at which last they are of a prodigious size: they are also not uncommon at the Marquesas, Hebrides, and New-Caledonia; but the low isles, and those of the temperate zone, are quite destitute of them. We can hardly reckon certain parroquets and pigeons among domestic birds; for though the natives of the Friendly and Society Isles, sometimes catch and tame them, yet they never have any breeds of them. The number of our new birds from New-Zeeland, is thirty-seven; that of the tropical isles, is forty-seven; the species from the ocean, the Southern extremities of America and the Southern lands, are upwards of twenty. The whole number thus amounts to 104; of which one half are aquatic: we have besides these, met with about thirty Linnæan species, of which above twenty are aquatic; and I am well persuaded that we have not been able to procure every species in the same manner, as we have not obtained a compleat Flora of every country we visited; the number

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of new birds therefore is aſtoniſhing, when compared to that of the known ſyſtem, and muſt prove what great expectations are to be formed of thoſe continents, which have not hitherto been much examined. The aquatic genera are, as we have already obſerved, very numerous, and among them we have the ſame remark to make which we have already made on the plants, namely that the moſt copious genera have ſtill received the greateſt additions. To the genus of *Anas* we have added nine new ſpecies, to that of the *Pelecanus* five, and to the *Procellariæ* twelve. In the ſame manner among the land birds, we have ſeven new parrots, ſix pigeons, and eight fly-catchers.

AMPHIBIA.

The few amphibia which we met with in the South Sea, are confined to the tropical countries; they are, 1ſt. the caret turtle which gives the tortoiſe-ſhell proper for manufacture, (*teſtudo imbricata* Linn.) 2d, the green turtle, (*teſtudo midas*) which is fit for eating; 3d. the common lizard, (*lacerta agilis*, Linn.) 4th. the gecko, (*lacerta gecko*) 5th. the amphibious ſnake, (*coluber laticaudatus*, Linn.) and 6th. the *anguis platura*, Linn. among which, none is poiſonous.

FISHES.

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FISHES.

The South Sea is rich in fiſh, and has a great variety of ſpecies; for though no branch of natural productions, was attended with more difficulties in the collection to us, not only from our very ſhort ſtay in many places, but likewiſe becauſe we were obliged almoſt wholly to depend upon the natives of the ſeveral countries, for this article, there being no expert fiſher-men on board; yet the ſea in various places yielded us the number of ſeventy-four ſpecies unknown heretofore; beſides about forty which are deſcribed in the Syſtem of Nature of the celebrated Linnæus. Among them we have only made one new genus, which till now has lain latent among the *chætodontes*, but ought juſtly to be ſeparated from them. The accurate obſerver, Prof. Forſkal, whoſe premature death in Arabia, every lover of ſcience muſt ſincerely lament, had the ſame idea, though I knew nothing of it, as his book was not publiſhed till after my return to Europe; he calls the new genus *acanthurus*, and I gave it the name of *harpurus*. The greateſt part of the fiſh in the South Sea are very good eating, many of them are delicious, and would do honour to a Roman feaſt; only a few of the branchioſtegous are noxious, of which we felt the fatal effects, as I ſhall mention in the ſequel. M. de Buffon has obſerved, that nature ſeems to pleaſe herſelf in caſting ſeveral beings very nearly in

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the ſame mould, as if certain conformations were more eaſy to her than others; he might have added, perhaps, with great propriety, becauſe ſuch conformations are moſt uſeful and neceſſary in the whole ſyſtem of organic bodies. Hence we have found that certain claſſes of plants are remarkably copious, likewiſe, that the moſt extenſive genera of birds, have ſtill received a greater number of new ſpecies; and that in the fiſhes alſo, the rich genera of *gadus blennius*, *ſparus* and *perca*, are moſt enlarged in the ſame manner; we may at the ſame time, I think, with the greateſt probability ſuppoſe, that the unknown treaſures in this laſt claſs are ſtill immenſe; firſt, from the great additions which it has been in our power to make, though we laboured under the difficulties aforementioned: and ſecondly, from the more imperfect ſtate of the definitions, which, according to the beſt method extant, muſt ſtill depend upon the very precarious number of rays in the fins.

INSECTS.

No countries in the world produce fewer ſpecies of inſects than thoſe of the South-Sea: it is ſurprizing how very few we met with, and thoſe of the moſt common and well-known ſorts. The only place where we ſaw them rather more abundant, was in New-Caledonia, and this I ſuſpect is owing to its proximity to New-Holland; but our ſhort ſtay there did not allow us to make the leaſt

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acquiſition in this branch. The moſt numerous ſorts are undoubtedly the cruſtaceous; but, among them, we ſaw none that were not well marked in the Linnæan ſyſtem. Here I muſt alſo remark, that there is a ſmall ſpecies of ſcorpion in the tropical iſles of the South-Sea, but more common to the Weſternmoſt than the Society Iſles, where I never ſaw one. The native, who was with us eight months, told us they were harmleſs; however, they were armed exactly as their cogeneric ſpecies. It is therefore reſerved for future enquiry, to determine by what accidental circumſtances the *virus* of the ſcorpion's ſting becomes more or leſs deleterious; eſpecially as the experiments made by Mr. de Maupertuis ſeem to intimate, that even the individuals of the ſame ſpecies are not all equally poiſonous; and that one and the ſame individual is, at different times, more or leſs dangerous. *Academie des Sciences*, 17.

SHELLS, AND OTHER VERMES.

THE ſhells of the South-Sea are far leſs various than might at firſt be expected; and the reefs of the tropical iſles generally yielded the moſt common Linnæan ſhells, ſuch as cowries, epiſcopal mitres, murices tritonis, the moſt common buccina, turbines, and neritæ. A few ſpecies at New-Zeeland, are new, though the greateſt part of them are minute. In regard to the molluſca, what little

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little diſcoveries we made, are confined to the Atlantic ocean; and of the remaining *orders* we no where found any thing new.

I. NUMBER.

THE whole number of ſpecies in the greater claſſes of animals, *viz.* quadrupeds, cetacea, amphibia, birds, and fiſh, which we ſaw in the South-Sea, according to the above enumeration, amounts to between 260 and 270, of which about one third are well known. Let us allow, that this number comprehends two thirds of the animals of thoſe claſſes, actually reſiding in the South-Sea, though we have reaſon to think, that the fauna is much more extenſive, we ſhall have upwards of 400; and ſuppoſing the claſſes of inſects and vermes to give only 150 ſpecies, the whole fauna of the South-Sea iſles will conſiſt of at leaſt 550 ſpecies, a prodigious number indeed, when compared with that of the Flora.

II. STATION.

THOUGH many of the birds in New-Zeeland are remarkable for the gay colors of their plumage; yet we found, when we came to Norfolk-Iſland, (which, as I have obſerved in my account of the plants, contains exactly the ſame ſpecies) that the ſame birds appeared there arrayed in far more vivid and burning tints, which muſt prove, that the climate has a conſiderable influence on colours. There is alſo a

ſpecies

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ſpecies of king-fiſher common to all the South-Sea iſles, of which the tropical varieties are much brighter than that of New-Zeeland. The plumage of birds is likewiſe adapted to the climate in another reſpect; for thoſe of warm countries have a moderate covering, whilſt thoſe of the cold parts of the world, and ſuch eſpecially, as are continually ſkimming over the ſea, have an immenſe quantity of feathers, each of which is double; and the pinguins, which almoſt conſtantly live in the water, have their ſhort, oblong feathers lying as cloſe above each other as the ſcales of fiſhes, being at the ſame time furniſhed with a thick coat of fat, by which they are enabled to reſiſt the cold: the caſe is the ſame with the ſeals, the geeſe, and all other Southern aquatic animals. The land birds, both within and without the tropics, build their neſts in trees, except only the common quail, which lives in New-Zeeland, and has all the manners of the European one. Of the water-fowl, ſome make their neſts on the ground, ſuch as the grallæ, which breed only in pairs; whilſt ſeveral ſpecies of ſhags, *(pelecani)* live gregarious in trees, and others in crevices of rocks; and ſome petrels (*procellariæ*) by thouſands together, burrow in holes under-ground cloſe by each other, where they educate their young, and to which they retire every night. The moſt prolific ſpecies in the South Sea, are the ducks, which hatch ſeveral eggs at one brood, and though the ſhags, penguins, and petrels, do not hatch more than one or two,

or

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or at moſt three eggs at a time, yet by being never diſturbed, and always keeping together in great flocks, they are become the moſt frequent and numerous. The moſt palatable ſpecies of fiſh are likewiſe the moſt prolific; but it muſt be obſerved, that there is no where ſuch abundance of fiſh in the South-Sea, as at New-Zeeland, by which means they are become the principal nouriſhment of the natives, who have found that way of living to be attended with the leaſt trouble, and conſequently ſuited to that indolent diſpoſition which they have in common with all barbarous nations.

III. VARIETY.

It does not appear, that the individuals of the animal kingdom are ſo much ſubject to variety in the South-Seas, as thoſe of the vegetable. Domeſtication, the great cauſe of degeneracy in ſo many of our animals, in the firſt place, is here confined to three ſpecies; the hog, dog, and cock: and ſecondly, it is in fact next to a ſtate of nature in theſe iſles: the hogs and the fowls run about at their eaſe the greateſt part of the day; the laſt eſpecially, which live entirely on what they pick up, without being regularly fed. The dog being here merely kept to be eaten, is not obliged to undergo the ſlavery, to which the varieties of that ſpecies are forced to ſubmit in our poliſhed countries; he lies at his eaſe all the day long, is fed at certain times, and nothing more is required

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of him: he is therefore not altered from his ſtate of nature in the leaſt; is probably inferior in all the ſenſitive faculties to any wild dog; (which may perhaps be owing to his food) and certainly, in no degree, partakes of the ſagacity and quick perception of our refined variety. Among the wild birds, the varieties are very few: two ſpecies of pigeons, two of parrots, one of king-fiſhers, and one or two of fly-catchers, are the only I know of, that vary any thing in different iſles; and it is much to be doubted, with regard to ſome of them, whether what we count varieties are not either diſtinct ſpecies, or only different ſexes of one and the ſame; circumſtances, which it is well known, require a long ſeries of obſervations, not to be made on a curſory view. The varieties in other claſſes are ſtill leſs conſiderable. ANIMAL KINGDOM

IV. CLASSIFICATION.

The animals of the South-Seas, as we have already obſerved, are moſt of them new ſpecies. The known ones between the tropics, are chiefly ſuch as are generally found all over the maritime parts of the torrid zone; thoſe of the temperate zone being principally aquatic, are common to thoſe latitudes in every ſea; or conſiſt of European ſpecies. Upon the whole, we found no more than two genera, which are diſtinct from thoſe already known, and all the remaining ſpecies rank under old genera. But it is not poſſible to

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refer thoſe to the two continents of Aſia and America, as was done with the plants; becauſe there are ſo very few genera, which are not common to both of them. We ſhall therefore, at preſent, confine our obſervations on the claſſes of animals, to the Southern aquatic birds, and the new genus of fiſh, which we eſtabliſhed. The genus of petrels, which contains only ſix ſpecies according to Linnæus's laſt ſyſtem, has received an addition of twelve new ſpecies from the Southern ſeas. The largeſt of them is the bird, which the Spaniards call the *Quebrantahueſſos*, or OSPREY-PETREL; the leaſt is the common ſtormfinch, *(Procellaria pelagica)* which is ſeen alike in the North ſea and in the South ſea, and in almoſt every latitude. Mr. de Briſſon, whom Mr. de Buffon juſtly cenſures for multiplying ſpecies, and ſubdividing genera, has divided the few known ſpecies into two genera, from ſome ſlight difference in the bill, which is not even worth remarking here. At the ſame time M. Scopoli, with as little propriety, unites the diomedea or albatros, with the procellariæ; and hath been led to this method of claſſing, by a real ſpecies of the laſt genus; which, upon what foundation I cannot imagine, he miſtakes for the bird Linnæus calls a DIOMEDEA. There are but two circumſtances which have occaſioned the errors of the various naturaliſts; the one, that they attached themſelves too much to the inveſtigation of individual ſpecies, without every now and then ſtopping to take a view of the general

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general chain of nature; and, to this we must ascribe the many mistakes in subdividing, or combining genera; the other, that, by continually fixing on the general view of the whole extent of nature, they forget to descend to the particulars of classification, which the imperfect state of the science requires. It is from keeping a just medium between these extremes, that the illustrious Linnæus has acquired so great a fame in the literary world, and methodized all the productions of nature with such judgment, that future ages will ever own him as the father of the science. It is from falling into the first error, that some untravelled naturalists load their books with the enumeration of varieties, instead of species. On the other hand, the great zoologist, and most elegant writer of this and many other ages, M. de Buffon, wholly solicitous to view his subject in all its grandeur, makes light of exposing here and there a neglect. After-ages may bring the science nearer to perfection, by combining what is valuable on both sides. Great as the loss of Linnæus must certainly be to science, it will not be so severely felt, whilst we have so enlightened botanists, as Mr. Banks and Dr. Solander, and such acute zoologists as M. de Buffon and Professor Pallas. The genus of pinguins Mr. Pennant set in its proper light, after it had lain lost, as it were, among the genera of DIOMEDEA and PHAETON, which are utter strangers to

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it. Mr. Pennant's Magellanic pinguin, the two miſplaced Linnæan ſpecies, and our three new ſpecies, have increaſed it conſiderably. The bill, though various in regard to thickneſs, has, however, the ſame character in them all, except that ſome ſpecies have the lower mandible truncated; the noſtrils are always linear apertures, which further proves their diſtinction from the diomedea. The feet are exactly of the ſame ſhape in them all. They have only the rudiments of wings, enlarged by a membrane into a fin, and covered with a kind of feathers, but ſo cloſely, that they ſeem like ſcales. It is this, beſides the ſhape of bill and feet, which diſtinguiſhes the genus of auks or murrs *(alcæ)* from them; for theſe laſt, though ſometimes incapable of flying, are only ſo on account of the *ſhortneſs*, not the *deficiency* of quills. The body of the pinguins is entirely covered with oblong, thick, hard, and gloſſy plumes, which form a coat of mail, impenetrable to wet, becauſe they are obliged to live almoſt continually in the ſea. They are confined to the temperate and frigid zones, at leaſt I know of none between the tropics. The genus of pelicans *(pelecanus)* might perhaps be ſeparated into three genera with greater juſtice, than authors have uſed in many of their dilacerations. The true pelican *(onocrotalus)* is greatly different from all the reſt of the ſpecies: the man of war *(p. aquilus)*; the gannet *(p. baſſanus)*; and the ſeveral ſorts of boobies *(p. ſula, ſiber & piſcator,)* form another diviſion; from which

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which the cormorant and ſhag (*p. carbo & graculus*) and four new ſpecies, are again widely different. But the characters of the feet, and the naked ſkin in which the eyes are ſituated, being common to them all, they may ſtill be continued in one common genus. The gannets and boobies, though they frequent particular places for breeding, are however, not gregarious as the ſorts of ſhags: ſome of theſe laſt build in vaſt numbers on the ſame tree; others ſit by thouſands in the cavities of overhanging cliffs along the ſea-ſhore, and again, another ſort build their elevated neſts on the ground, by whole myriads.

Among the fiſh we have only ſeparated a genus from the *chætodon*, which differs from it by having no ſcales on the fins, a ſpine on each ſide of the tail, and a different number of branchio-ſtegous rays. Of this genus which has obtained the name of HARPURUS, there are ſeven ſpecies, viz, three new ones, (4, the *ch. nigricans,*) (5, *lineatus*) (6, *faſciatus* of Linnæus) and 7, one deſcribed by Haſſelquiſt, and erroneouſly quoted for the *ch. nigricans* by Linnæus. We have augmented the Linnæan genus of SCIÆNA, with eight new ſpecies, which have every one the ſame generic characters, ſo that this genus now ſtands more firmly among the reſt, to which it is related. The genera of LABRUS and SPARUS merit the utmoſt attention of the naturaliſts, ſince every writer gives us different, and often contradictory characteriſtics

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racteriſtics of them, which may be ſeen by comparing the definitions of Linnæus, (Syſt. Nat. xii.) Gouan, (genera piſcium) Brunniche, (icthyolog maſſilienſ.) Pallas, (ſpicileg. zool.) and Forſkal, (Faun. Ægypt. arab.) ſome of which are certainly found from the examination of a few ſpecies only.

I ſhall now briefly mention the USE which is made of the various animal productions in the South Sea iſles. The animal kingdom has at all times furniſhed mankind with a variety of neceſſaries, conveniencies, and luxuries; the firſt ſtep towards the civilization of nations, is the adoption of ſuch things as ſerve to make life more eaſy and comfortable; and the firſt conſequence of a civilized ſtate, is the introduction of ſuch articles as captivate the various ſenſes, and flatter the appetites. Hence in the South Sea we find the natives of the Society Iſles in the higheſt ſtate of civilization; they poſſeſs the comforts and even luxuries of life: the more Weſterly nations loſe the luxuries, and retain only the conveniencies: the New-Zealanders more ſavage, have even theſe in an inferior degree; and the wretched inhabitants of Tierra del Fuego, can hardly be ſaid to have more than the bare neceſſaries of life, and therefore, of all our brethren, approach the neareſt to brutes. Almoſt every ſpecies of fiſh is eaten at the tropical iſles, and generally looked upon by the inhabitants as a dainty, which they prefer to pork and dog's fleſh. Their birds, on the contrary, are ſeldom taken for the

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the ſake of any thing elſe than the feathers, (excepting the domeſtic fowls and wild ducks) of which, they make a variety of ornaments, and upon which, as real luxuries, they ſet a very high value: nay, ſo far are they from eating all birds, that they have a kind of ſuperſtitious regard for herons and king-fiſhers, almoſt like that which is paid to the ſtork, the robin red-breaſt, the ſwallow, and other familiar harmleſs birds in England. The natives of the Society Iſles, have their immenſe helmets and targets covered with the ſhining plumes of a pigeon, and edged round with a vaſt number of the long white tail feathers of the tropic-bird: but what they value as much as diamonds and pearls are eſteemed in Europe, are the crimſon feathers of certain parroquets, of which, they make taſſels to ornament the warriors. We accidentally procured a quantity of theſe feathers at Amſterdam, one of the Friendly Iſles, where they faſtened them on pieces of their ſtuffs. Theſe being carried to *O-Taheitee*, and ſhared out in little pieces, procured us a great number of hogs; for a bit of two inches ſquare, covered with feathers, would at any time, be eagerly purchaſed with a hog. The reſt of the tropical iſlanders make a variety of ornaments of birds feathers, ſuch as creſted caps; at Eaſter Iſle, and the Marqueſas, fly-flaps, &c. The hair of the dog is employed in fringing their targets at O-Taheitee, and nothing is more common than vaſt bunches of human hair tied round the knees, ancles, &c.

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among the natives of the Marqueſas. The Eaſter Iſlanders make an ornament hanging on the breaſt of a porpeſſe's bone, the O-Taheiteans make ſaws and various utenſils of bone, ſhark's teeth, &c. The tails of the ſting ray (*raja paſtinaca*) are univerſally employed to arm the ſpears of the natives; the Mallicoleſe point their arrows with bone; and the inhabitants of Tierra del Fuego have fiſh gigs armed with jagged bones. A variety of ſhells are alſo made uſe of in the tropical iſles, ſome are eaten, ſome make necklaces, ſome bracelets and fiſh hooks, others weights to ſink their fiſhing lines, and they wear ſome miſhapen pearls in their ears. Not even the coral is without its uſe, for it is employed to ſmooth and poliſh the ſurface of their canoes. The New-Zeelanders living continually on fiſh, are glad when they can get a dog or bird to eat, which with them, always is reckoned a dainty. They employ the ſkins of dogs for their cloaths, but merely for convenience, namely, to keep them warm: their ornaments are however, a comb of the bone of ſome cetaceous animal, which is ſtuck in the hair; and feathers of gulls, parrots, &c. the firſt they wear on their head, the laſt on their battle axes; laſtly, they have ſome ornaments which are taken from the mineral kingdom. Among the tropical iſles, the natives dreſs all their meat over the fire, with as much cleanlineſs and nicety as we could do it ourſelves, ſo that the delicate appearance of their victuals often tempted us to yield to their invitations,

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invitations, which their hoſpitable diſpoſition never failed to expreſs in the moſt engaging manner. At New-Zeeland too, the inhabitants though leſs hoſpitable, and more uncleanly, yet dreſs their fiſh with ſo much care, that a man with a good appetite would not refuſe to eat with them. But the people of Tierra del Fuego are not only miſerable in their appearance, being ſcarce covered with a bit of ſeal's ſkin, but they are likewiſe highly diſguſtful in the manner of taking their food, which conſiſts of raw ſeals fleſh, almoſt putrid, and of which the rank fat is to their taſte the moſt delicious part: in other places where ſeals are more ſcarce, they derive their ſubſiſtence from the muſcle-ſhells, which are common on the rocks. We found vaſt refreſhment from the animals in the various countries we met with, and only in a few inſtances ſuffered by eating ſome ſpecies of fiſh. The one of theſe was a *Sparus*, of which three were caught at Mallicollo, the largeſt about fifteen inches long: about ſixteen perſons eat of theſe three fiſh, and found themſelves affected with a prodigious numbneſs, which ſoon made them quite giddy, and incapable of ſtanding; they had afterwards excruciating pains in all their bones, which did not go off till ten days afterwards, by the continual uſe of vomits, and ſudorifics. A hog that eat part of the entrails, ſwelled prodigiouſly, and died a few hours after: ſeveral dogs alſo which eat of the offal, lay for a fortnight in the greateſt agonies, howling and foaming at the mouth, utterly incapable of ſtanding on their legs. A little

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favourite parroquet, which eat a bit of the fiſh, likewiſe died in conſequence of it. Sometime afterwards, I was told that a fiſh of the ſame ſpecies was caught at Tanna by ſome of the ſailors, who ſalted it and eat it, without any ill effects; from whence it is to be ſuppoſed that this ſpecies is not poiſonous in itſelf, but only from the food which it accidently meets with, in the ſame manner as many fiſh in the Weſt Indies, otherwiſe very wholeſome to eat, are ſaid to become deleterious, by feeding on the manchineel apples. The other ſort was a new ſpecies of TETRODON, whoſe ugly appearance alone might have prejudiced us againſt it, had we been any ways nice; but ſo much is the value of freſh proviſions enhanced by being long at ſea, that we were glad of even this opportunity of eating an ill-looking animal. Only three of us eat a very ſmall bit of the liver, not above two or three morſels each at ſupper; before two o'clock the next morning, we were all up, complaining of the effects of the poiſon, which operated exactly as that of the ſparus had done before: we immediately took vomits, and having evacuated all we had eaten, eſcaped with a giddineſs, laſting only a few days, without any of the acute pain experienced in the other inſtance. Another hog then on board, unfortunately taſting the entrails, ſwelled as the other had done and died: ſometime after, another TETRODON of the ſame ſpecies, was caught, and being opened, one of the dogs eat a ſmall quantity of the entrails, and lived in the moſt dreadful agonies for a fortnight after, ſo that he

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was at length thrown over board as incurable. The ſparus ſeems to have been mentioned by QUIROS, under the name of PARGOS, which he ſays at one time poiſoned great part of his ſhip's company. The tetrodon again is related cloſely to the *Tetrodon ocellatus*, which in Japan is commonly made uſe of in caſes of ſelf-deſtruction, and the virus of which is enhanced by the *Ilicium aniſatum*, an otherwiſe ſalutary plant. *(See Kæmpfer Hiſt. Japon.)* ANIMAL KINGDOM

It remains now that I ſhould ſay ſomething on the animals, which are looked on as ſigns of the approach of land: and I ought here to add, that the ſight of birds is not more to be depended on, than that of ſea-weeds, unleſs we are well aſſured that the birds we ſee, are land birds, or never range to any diſtance from land; a circumſtance not eaſily aſcertained. Seals, pinguins, petrels, and albatroſſes, are ſeen ſix or ſeven hundred leagues from land, in the very middle of the South Sea, ſo that they cannot be depended on. Between the tropics, men of war birds are ſeen a hundred leagues from land, and as the iſles of the South Sea there, are much nearer together, they cannot be looked upon as ſigns of land. Boobies and ſhags do not wander ſo far; and the laſt, commonly not out of ſight of land; but one knows not how far accident may ſometimes carry them.

Theſe are the few remarks on animals which occured to me, during the courſe of this expedition.

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CHAP. VI.

Remarks on the Human Species in the South-Sea Iſles.

MIRANTUR ALIQUI ALTITUDINES MONTIUM, INGENTES FLUCTUS MARIS, ALTISSIMOS LAPSUS FLUMINUM, ET OCEANI AMBITUM, ET GYROS SIDERUM—ET RELINQUUNT SEIPSOS, NEC MIRANTUR. *Auguſtinus.*

The proper ſtudy of mankind is MAN. POPE.

HUMAN SPECIES.

THOUGH we have many accounts of diſtant regions, it has been a general misfortune, that their authors were either too ignorant to collect any valuable and uſeful obſervations, or deſirous of making a ſhew with a ſuperficial knowledge, have given us their opinions, embelliſhed with ſurmiſes, and trite reflections, borrowed from other writers. If they happened to be capable of collecting and communicating uſeful information, relative to the ſtudy of nature, they have uſually confined themſelves to the inanimate bodies of the creation; or have principally conſidered part of the brute organic; while Man,

" A creature form'd of earth - - -
" Exalted from ſo baſe original
" With heav'nly ſpoils, - - - " MILTON.

is entirely neglected and forgotten, amongſt other leſs important purſuits.

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It must likewise be acknowledged, that several learned and ingenious works on the human species, have appeared in the present age, written by philosophers, whose names alone should seem to be a sufficient recommendation. I have, however, early observed, that, being misled by the vague reports of unphilosophical travellers, which they have sometimes wilfully changed and moulded, to suit their own opinions; their systems, though ever so ingenious, are seldom agreeable to nature. It appears indeed, to be the general fault of these writers, to study mankind only in their cabinets; or, at best, to observe no other than highly civilized nations, who have over-run all parts of the world by the help of navigation, and from commercial views; and are more or less degenerate and tainted with vices.

As we met with many tribes in the course of our expedition, who had never seen any European or other polished nation, I thought it my duty to attend to this branch of the great study of nature, as much as my other occupations would permit. I collected facts, and now communicate them to the impartial and learned world, with a few inferences, as an imperfect essay.

SECT.

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SECTION I.

On the NUMBERS of INHABITANTS in the SOUTH-SEA-ISLES, and their POPULATION.

Non temere & fortuito sati & creati sumus, & profecto est quædam vis, quæ generi consulit humano.

M. TULLIUS CICERO.

POPULATION. WE shall begin with O-Taheitee, one of the largest, most populous, and best-cultivated islands of the Pacific Ocean. The high hills of this happy country are without inhabitants; and, if we except some fertile well-watered vallies, containing a few cottages, in the midst of the mountains, the whole interior country is still unimproved, and such as it came out of the hands of nature. The flat grounds, surrounding the island towards the sea, contain chiefly the habitations of the natives; and nothing can be seen more beautiful, more cultivated, and more fertile, than these extensive plains. The whole ground is covered with coco-nut and bread-fruit trees, which yield the chief subsistence for its inhabitants: all is interspersed with plantations of bananas, young mulberry-trees for the manufacture of their cloth, and other useful plants; such as yams, eddoes, sugar-canes, and many others too tedious to enumerate. Under the shade of these agreeable groves, we every where beheld numerous houses, which we should have con-

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considered as mere ſheds, were they not ſufficient to ſcreen the owners from rain, moiſture, and the inclemencies of the air, which is always mild and temperate in theſe happy regions. All the houſes are filled with people, and the largeſt habitations contain ſeveral families. Wherever we walked, we found the roads lined with natives, and not one of the houſes was empty, though we had left the ſhores oppoſite the ſhip, crowded with people. All theſe circumſtances indicate, that there is an extraordinary population in this queen of tropical iſles; and we have every neceſſary argument to corroborate the aſſertion. POPULATION.

The mild and temperate climate, under the powerful, benevolent, and congenial influence of the ſun, mitigated by alternate ſea and land breezes, quickens the growth of the vegetable and animal creation; and therefore, in ſome meaſure alſo, benefits and improves the human frame, by this happy combination. Such is the great abundance of the fineſt fruit, growing, as it were, without cultivation, that none are diſtreſſed for food. The ſea is another great reſource for the inhabitants of this and all the Society Iſles. They catch great numbers of fine and delicious fiſh; they collect numberleſs ſhells, cray-fiſh, ſea-eggs, and ſeveral kinds of blubbers, along the reefs, both by day and night; and often go to the low iſlands a few leagues off, in queſt of cavallas, turtles, and water-fowl. There is not a houſe or cottage, about which you do not obſerve a dog,

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dog, ſeveral cocks and hens, and frequently two or three pigs. All this not only affords a ſuperfluity, but likewiſe a great variety of animal and vegetable food. The bark of the *morus papyrifera*, the bread-fruit tree, and ſome others, afford them materials for an eaſy, light, and warm kind of clothing; which they manufacture of various qualities, cut into various ſhapes, and dye with various colours. Food and raiment, the two great wants of the human ſpecies, are therefore eaſily ſupplied, and the inhabitants are hitherto fortunate enough to have none of the artificial wants, which luxury, avarice, and ambition have introduced among Europeans.

The call of nature is heard at an early age in this genial climate: the inhabitants therefore ſoon begin to chuſe an agreeable partner for life, happy in the pleaſing expectation of ſeeing themſelves repreſented, and as it were reproduced in a numerous offspring.

Theſe circumſtances, when compared with the many wants of our civilized ſtate, the labours we muſt undergo in ſupplying theſe wants, and eſpecially thoſe which are moſt indiſpenſible in our climates, and the many difficulties preceding and attendant on our marriages, will be ſufficient to prove, that in the natural courſe of things, population muſt be great in theſe happy regions. But this reaſoning does not give a clear and preciſe idea of the ſubject, I will therefore attempt to enable the reader to make a near eſtimate of the real population of this and all the adjacent iſles.

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When we came the second time to O-Taheitee in April, 1774, we found the inhabitants busied in making preparations for a great naval expedition against MOREA, a district in EIMEO. We saw a fleet of their war-canoes collected together, with a great number of small craft: we saw the natives preparing the war-canoes in several districts, and in some they were already launched; we found them exercising their rowers and warriors; and the armaments of two districts actually appeared in review before the great chief's house, at O-PARRE. The district of ATAHOOROO is one of the greatest, and that of TITTAHAW one of the smallest. The first had equipped 159 war-canoes, and about 70 small vessels intended for the chiefs, the sick and wounded, and probably to carry some provisions. The second district sent 44 war-canoes, and about 20 or 30 smaller ones. That part of O-Taheitee, which is called T-OBREONOO, or the great Western peninsula, contains 24 districts in all; the lesser Eastern peninsula, or TE-ARRABOO, is divided into 19. Let us suppose, that each district of the first is capable of sending the medium between the largest and least number of war-canoes, as mentioned before, which would amount to 100: nay, to be more moderate, let us suppose each district can send no more than 50 war-canoes, and 25 small attending boats; and we shall find the war-canoes of T-OBREONOO to amount to 1200, and the small vessels to 600. We observed in the large war-canoes 50 per- POPULATION.

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POPULATION.

ſons, including warriors, paddlers, and ſteerers; and in the ſmaller about 30. (We found, indeed, ſome war-canoes, that required 144 paddlers, eight men to ſteer, one to command the paddlers, and about 30 warriors for the ſtage; but, as there are only one or two veſſels of that ſize in each iſland, we can make no inference from thence.) To be very moderate in our computations, we will ſuppoſe no more than 20 men in each of theſe war-canoes; and, according to this laſt ſuppoſition, the men required to defend and navigate 1200 veſſels, will amount to 24,000. Each of the ſmall attending boats contained at a medium five men; conſequently the crews of all the ſmall canoes of the 24 diſtricts, at the rate of 25 veſſels from each diſtrict, form a number of 3000, which, added to the complement of the war-canoes, are 27,000 men. Let us further ſuppoſe each of theſe men to be married to a woman, and to have one child; and in this caſe, we ſhall have the number of 81,000 perſons. Every one will allow, that this is the very loweſt computation that can be made, and that the number of living inhabitants of T-Obreonoo muſt be at leaſt double the above number. For all the inhabitants are not warriors; nor are all employed in navigating the veſſels; there remain beſides, many old men at home; and it is certainly inſufficient to allow a ſingle child for every married couple; for marriage here is commonly bleſſed with a numerous offſpring. I have ſeen more than one family, wherein

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there were ſix or eight children. HAPPAI, the father of O-Too, the preſent king of T-Obreonoo, had eight children, ſeven of whom were ſtill alive, when we came to O-Taheitee. Many other families had from three to five children. But ſome will be ready enough to queſtion this great population, and to doubt, whether ſuch numbers can find food in proportion to ſupport them all: it is but juſt to eſtabliſh the fact on a firm baſis. We have frequently ſpoken with warmth of the extraordinary fertility of theſe regions; we are likewiſe able to demonſtrate the truth of what we have advanced. When we viſited the Society-Iſles, the natives often told us, that three large bread-fruit trees were ſufficient to feed a full-grown perſon during the bread-fruit ſeaſon, that is, during eight months. The largeſt bread-fruit trees, with their branches, occupy a ſpace in diameter about forty feet; conſequently every tree occupies 1600 ſquare feet, or if round 1256$\frac{3}{4}$ feet. An Engliſh acre contains 43,560 ſquare feet; it follows, that above 27 large bread-fruit trees in the firſt caſe, and 35 in the ſecond, would ſtand on an acre; and theſe will feed ten perſons for the ſpace of eight months in the firſt caſe, and 12 perſons in the ſecond. During the remaining four months of the year, the natives live upon the roots of yams and eddoes, the banana, and the fruit of the horſe-plantanes, of which they have immenſe plantations, in the vallies of the uninhabited mountainous part of the iſle. They likewiſe make a kind of ſour- POPULATION.

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POPULATION.

paſte of the bread-fruit by fermentation, which keeps for ſeveral months, and is both healthy and palatable to thoſe who are once uſed to its acidulated taſte. Now let us compare this to the greateſt fertility in known countries. In France *, on a ſquare league, containing about 4867 French acres *(arpents,)* no more than 1390 perſons can live by agriculture, and 2604 by vintage: in the firſt caſe, one perſon requires 3½ *arpents* to live upon, and in the latter nearly two *arpents* muſt be allotted for the ſubſiſtence of one individual. In O-Taheitee, and the Society-Iſles, about ten or twelve perſons live eight months on one Engliſh acre, which contains 43,560 ſquare feet; whereas the arpent, containing 51,550 ſquare feet Engliſh meaſure, feeds but one perſon ſix months in France. This calculation proves, that taking ſuch parts, as are beſt cultivated in both countries, the population of O-Taheitee is to that of France, nearly as 17 to 1. Moreover, let us ſuppoſe, that on the whole iſle of O-Taheitee, there are no more than 40 ſquare Engliſh miles of land planted with bread-fruit trees, which ſuppoſition certainly does not err in exceſs. Each mile conſiſts of 640 acres, and 40 miles muſt accordingly contain 25,600 acres. Ten or twelve men live eight months on one acre; conſequently thirty or thirty-ſix men can ſubſiſt the ſame time on three acres, and twenty or twenty-four men find food during a whole year on three acres;

* Diſcours ſur les Vignes Dijon. 1756. 12mo.

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consequently, on the whole extent of 25,600 acres, 170,660 persons, according to the first supposition, or 204,800 according to the second, can be supported yearly. But we have seen above, that only 44,125 individuals are supposed to exist on O-Taheitee, according to our first calculation, which is nearly less by 26,535 persons in the first instance, or 60,675 in the second, than the isle can support, upon the most moderate calculation. Having thus fairly stated the possibility of so great a population, we shall certainly not be thought unreasonable in our estimate. POPULATION.

Te-Arraboo has 19 or 20 districts, and is equally well cultivated and populous: for its natives not only withstood the whole power of the inhabitants of T-Obreonoo, but even beat their forces and ravaged their shores. It might therefore be deemed very little, if at all inferior, in power and in numbers: but we will reckon them to be only one half of the population of T-Obreonoo; and the number of its inhabitants will be 40,500.

Imeo is a little, but well-cultivated isle, subject to the king of T-Obreonoo. According to the accounts of the Taheiteans, it opposed and beat off the whole force of Te-Arraboo; and the great armaments we observed going forward in T-Obreonoo, for the reduction of Iméo, prove that they have no mean idea of their strength; notwithstanding this, we shall allow them no more than

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POPULATION. one fourth of the population of T-Obreonoo, *i. e.* 20,250, which, added to the inhabitants of Te-Arraboo - - 40,500, and of thoſe of T-Obreonoo - - - - 81,000, makes the number of inhabitants of all O-Taheitee, and of Iméo, amount to - - - - } 141,750.

All theſe are ſubject to O-Too, king of T-Obreonoo; for though Te-Arraboo has a king of its own, yet that king is a vaſſal to O-Too. We conclude therefore, that allowing 150,000 perſons for the population of O-Taheitee and Iméo, the computation muſt be conſidered as very moderate.

The iſles of Huahine, O-Kaietea, O-Tahà, Bola-bola, Mourua, Tabu-a-Manoo, and Maâtèa, are certainly very populous; for we ſaw three of them, and found them all well-cultivated, and equally well-peopled; and, as the king of Bola-bola has ſubdued O-Raietea, and O-Tahà, it is highly probable, that his power, and conſequently the population of Bora-bora and Mourua, muſt be nearly upon a par with that of the two conquered iſlands. If we allow 200,000 inhabitants for all theſe ſeven iſles, the account will by no means be exaggerated.

The five Marqueſas are likewiſe very populous, for the natives cultivate and inhabit all the ſlopes of their hills. Between them, and the Society-Iſles, are a vaſt number of low iſles full of inhabitants.

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bitants. To the Eaſt and South-Eaſt of O-Tahaitee are ſtill more. We ſaw about five in the year 1773; and as many, if not more in 1774. In the Endeavour ſeveral more were diſcovered; and Capts. Wallis and Carteret found many alſo. We cannot think the allowance too great, when we ſuppoſe all theſe iſlands, and the Marqueſas to contain 100,000 inhabitants. POPULATION.

Farther to the Weſt is a cluſter of iſles, which we call the Friendly Iſles. Tonga-Tabu the largeſt of them, is in every part highly cultivated; the barren ſandy outſkirts towards the ſea, and the road leading through the iſle alone excepted, all the reſt ſeems to be private property, is fenced in, and inhabited by a numerous, induſtrious and friendly people. E-Aoowe is leſs in ſize, nor is it wholly cultivated, any more than A-Namocka: nevertheleſs there are great numbers of inhabitants in both. About A-Namocka is a collection of ſmall iſles, all full of people: and if we conſult Taeſman, we find the ſame archipelago continued under the name of Prince William's Iſles. I ſuppoſe the inhabitants of all theſe iſles amount to about 200,000.

Still more to the Weſt is that cluſter of large iſlands, to which we gave the name of the New Hebrides. Theſe, though far from being ſo populous as the Society and Friendly Iſles, yet being infinitely larger, contain a conſiderable number of inhabitants. We found a great croud of people on one of them, named Mallicollo,

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POPULATION.

collo, and if we may form a judgment from the cultivation in Ambrym it muſt be equally, if not better inhabited; the iſles of Aurora, of Lepers, and Whitſuntide, ſeem to be leſs populous; Tierra del Eſpiritu Santo is large, and perhaps in proportion to its ſize, has many inhabitants. The iſles of Pa-oom, A-Pee, Three-hills, Shepherd, Mountague, Hinchinbrook, and Sandwich, are all inhabited, and the latter ſeemed to be very fertile and populous. Irromanga, and Tanna, from our own obſervations, and the iſles of Irronan, Immer, and Anattom according to the informations we received at Tanna, are full of people: all theſe therefore, together may be ſuppoſed to contain at leaſt 200,000 inhabitants.

If we ſuppoſe the number of ſouls in New-Caledonia and its adjacent iſles to be 50,000, the allowance, it is apprehended, cannot be deemed very faulty; for though theſe parts be not ſo highly populous as ſome others; an extent of eighty leagues in length, will juſtify the gueſs we have made concerning its ſtate of population.

The Southern iſle of New-Zeeland has very few inhabitants; but the Northernmoſt, according to the accounts we had from Capt. Cook, and from what we ſaw in ſome few places, as we paſſed by, is much better peopled, nay, in ſome ſpots very populous; there-

fore

fore allowing 100,000 ſouls to both iſles, we rather think our eſtimate to fall ſhort of the true population. POPULATION.

If we take the ſum of theſe numbers, we find the whole of the inhabitants of the iſles in the South Sea	150,000	O-Tahaitee and Iméo.
	200,000	Society Iſles.
	100,000	Marqueſas and Low Iſles.
	200,000	Friendly Iſles.
	200,000	New Hebrides.
	50,000	New Caledonia.
	100,000	New Zeeland.
Amounting to	1,000,000.	

The population in Tierra del Fuego is ſo thin, and they live in ſo ſmall tribes, or rather families, that I can hardly believe they exceed in all, two thouſand individuals, ſcattered over a ſurface of land, containing at leaſt, as much as would form the half of Ireland.

This account of the population of the iſles we viſited, in the South Seas, I will now conclude with the two following remarks.

Firſt, I do not pretend that my eſtimate of the numbers of the inhabitants is perfectly accurate; at beſt it is but a gueſs approaching as near to truth as the data which we had opportunities of collecting would permit; and if upon the whole there is any fault

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in it, it rather conſiſts in having formed too ſmall an eſtimate, or if any particular account ſhould exceed the true number, it muſt be in New Caledonia.

Secondly, The population of countries encreaſes in the ſame proportion with civilization and cultivation. Not that I believe civilization or cultivation to be the true cauſes of a greater population; but they are rather, in my opinion, its effects. As ſoon as the numbers increaſe in a confined place, viz. an iſland, to ſuch a degree, that its inhabitants are obliged to cultivate ſome plants for their food, becauſe the natural wild productions are no longer ſufficient, they then deviſe methods for performing this taſk in an eaſy and proper manner; they find themſelves obliged to obtain from others, the ſeeds and roots, to ſtipulate among themſelves, not to deſtroy each others plantations; to defend them jointly againſt the violence of invaders, and to give each other mutual aſſiſtance. Such are the beginnings of arts and cultivation, ſuch is the riſe of civil ſocieties; ſooner or later they cauſe diſtinctions of rank, and the various degrees of power, influence, and wealth, which, more or leſs are obſerved among mankind. Nay, they often produce a material difference in the colour, habits, and forms of the human ſpecies, of which, we ſhall now treat more at large.

SECT.

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SECTION II.

On the VARIETIES of the HUMAN SPECIES, relative to COLOUR, SIZE, FORM, HABIT, and NATURAL TURN of MIND in the NATIVES of the SOUTH-SEA ISLES.

Εχι δε τι και παρα τα κλιματα· ωστε τα μεν φυσει
Εστιν επιχωρια τισι, τα δε θεσει, και ασκησει. STRABO lib. 2.

VARIETIES OF MEN.

THE varieties of the human ſpecies are, as every one knows, very numerous. The ſmall ſize, the tawny colour, the miſtruſtful temper, are as peculiar to the Eſquimaux; as the noble and beautiful figure, and outline of the body, the fair complexion, and the treacherous turn of mind, to the inhabitant of Tcherkaſſia. The native of Senegal is characteriſed by a timorous diſpoſition, by his jetty black ſkin, and criſped wooly hair. A majeſtic ſize, red hair, a blue languiſhing eye, a remarkably fair complexion, and a warlike, intrepid, but open and generous temper diſtinguiſh the Teutonic tribes of the North of Europe, from the reſt of mankind. But to enumerate all theſe varieties, requires too much time; and the ſubject has been ſo fully treated of by others, that it would be highly improper to repeat their obſervations. I will therefore confine myſelf to a ſketch of the different varieties

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peculiar to every country we have viſited, and then endeavour to enumerate their various and probable cauſes.

We chiefly obſerved two great varieties of people in the South Seas; the one more fair, well limbed, athletic, of a fine ſize, and a kind benevolent temper; the other, blacker, the hair juſt beginning to become woolly and criſp, the body more ſlender and low, and their temper, if poſſible more briſk, though ſomewhat miſtruſtful. The firſt race inhabits O-Taheitee, and the Society Iſles, the Marqueſas, the Friendly Iſles, Eaſter-Iſland, and New-Zeeland. The ſecond race peoples New-Caledonia, Tanna, and the New Hebrides, eſpecially Mallicollo. The Peſherais, are not I think, to be ranked among the natives of the South Sea, as it is not to be doubted, that they originally came to Tierra del Fuego, from the American continent. Each of the above two races of men, is again divided into ſeveral varieties, which form the gradations towards the other race; ſo that we find ſome of the firſt race almoſt as black and ſlender as ſome of the ſecond; and in this ſecond race are ſome ſtrong, athletic figures, which may almoſt vie with the firſt; however, as we have many good reaſons for comprehending in one tribe all the iſlanders enumerated under the firſt race; we could not help giving to all a general character, from which, on account of the extent and compaſs, wherein theſe nations are diſperſed, the outſkirts or extremes muſt deviate:

Firſt.

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I. *Firſt.* O-TAHEITEE, and the adjacent Society-Iſles, no doubt contain the moſt beautiful variety of the firſt race: but even here nature ſeems to follow that richneſs, luxuriance, and variety, which we have obſerved in its vegetation; it is not confined to a ſingle type or model. The common people are moſt expoſed to air and ſun; they do all kinds of dirty work; they exert their ſtrength in agriculture, fiſhing, paddling, building of houſes and canoes; and laſtly, they are ſtinted in their food. From theſe cauſes, they degenerate as it were towards the ſecond race, but always preſerve ſome remains of their original type; which, in their chiefs or Arees, and the better ſort of people, appears in its full luſtre and perfection. The colour of their ſkin is leſs tawny than that of a Spaniard, and not ſo coppery as that of an American; it is of a lighter tint than the faireſt complexion of an inhabitant of the Eaſt-Indian iſlands; in a word, it is of a white, tinctured with a browniſh yellow, however not ſo ſtrongly mixed, but that on the cheek of the faireſt of their women, you may eaſily diſtinguiſh a ſpreading bluſh. From this complexion we find all the intermediate hues down to a lively brown, bordering upon the ſwarthy complexion of the ſecond race. Their hair is commonly black, ſtrong, naturally falling in the moſt beautiful ringlets, and ſhining with the perfumed cocoa-nut-oil. I ſaw but few with yellowiſh-brown or ſandy hair, and often no more than the extremities were yellowiſh, and the roots

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of a darker brown. A ſingle man in O-Tahà had perfectly red hair, a fairer complexion than the reſt, and was ſprinkled all over with freckles. The features of the face are generally regular, ſoft, and beautiful; the noſe ſomething broad below; the chin is overſpread and darkened by a fine beard. The women have an open, chearful countenance, a full, bright, and ſparkling eye; the face more round than oval; the features arranged with uncommon ſymmetry, and heightened and improved by a ſmile, which beggars all deſcription. The reſt of the body, above the waiſt, is well proportioned, included in the moſt beautiful, ſoft outline, and ſometimes extremely feminine. Many of the Arees and Manahounes are of an athletic habit, but always blended with a degree of effeminacy. The feet are rather large, and what might be thought out of proportion. The common people are likewiſe in general well-built and proportioned, but more active, and with limbs and joints that are well knit. The women are in general finely, nay delicately ſhaped. The arms, hands, and fingers of ſome are ſo exquiſitely delicate and beautiful, that they would do honour to a Venus of Medicis. Unfortunately the habit of walking barefooted, has deſtroyed that beautiful figure in their legs, which are commonly large and rather clumſy. Of the men, the Arees are in general of a tall ſtature. I ſaw ſeveral who exceeded ſix feet three inches, and one man was ſix feet four inches; nor are the common people always

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ways confined to a ſhort ſize. The women are rather of low ſtature, and but few are of a ſize approaching that of men, though I ſaw a girl ſix feet high, and others very tall. The natives of theſe iſles are generally of a lively, briſk temper, great lovers of mirth and laughter, and of an open, eaſy, benevolent character. Their natural levity hinders them from paying a long attention to any one thing. You might as well undertake to fix mercury, as to keep their mind ſteady on the ſame ſubject. The relaxation of their ſolids, under a powerful ſun, cauſes a great indolence, and an unconquerable averſion to any laborious undertaking. Thoſe that are in power and affluence, generally indulge themſelves in eating, and diſtend the frame of their body to its utmoſt ſtretch. They are abſolutely inactive, refuſe to take even their victuals, and permit themſelves to be crammed. The great plenty of good and nouriſhing food, together with the fine climate, the beauty and unreſerved behaviour of their females, invite them powerfully to the enjoyments and pleaſures of love. They begin very early to abandon themſelves to the moſt libidinous ſcenes. Their ſongs, their dances, and dramatic performances, breathe a ſpirit of luxury. They are, for the reſt, hoſpitable: the lower ſort like to pilfer from foreigners, being too powerfully tempted by the ſight of new and curious things, which are very valuable to them. In their wars, they fight with great bravery and valour. In ſhort, their character is as amiable as

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that of any nation, that ever came unimproved out of the hands of nature.

Secondly. The variety of men, next in beauty to thoſe of the Society-Iſles, are the inhabitants of the MARQUESAS. They are in general more tawny than the former being ſituated in the latitude of 9° 57′ South, nearer the line than the Society-Iſles; and they are alſo more accuſtomed to go without any covering; their privities excepted: both which reaſons are ſufficient to account for the darker hue of their ſkin. However, there are ſome few more fair among them; and their women, who generally go covered, are almoſt as fair as thoſe in the Society-Iſles. Their men are generally ſtout-limbed, but none are ſo fleſhy as thoſe in the laſt-mentioned iſles, owing, as I ſuppoſe, to their greater activity; for, as a very conſiderable part of them live on the ſlopes and the very ſummits of high hills, where their habitations have much the appearance of the ayries of eagles, on the craggy ſummits of inacceſſible rocks, they muſt of courſe have a ſlender habit of body, from the frequent climbing of theſe high mountains, and from the keen air, which they breathe in regions almoſt conſtantly involved in clouds. They have black beards and fine hair on their heads. Their females and younger people have beautiful, regular features, and oval faces; but the grown men loſe their ſprightlineſs, by the general cuſtom of puncturing cloſely, all their body and faces, in the moſt ſtrange,

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but regular manner, in ſcrolls, circles, lines, and chequerwiſe; which of courſe deſtroys all the features, and the regularity of lineaments. The bodies remain, however, fine and proportioned, all the limbs ſtrong and muſcular, with an agreeable outline. The young people are generally moſt beautiful, and would afford many a fine model for a Ganymede. The women have a ſoft, melting outline, the fineſt ſymmetry, and the moſt delicate extremities. Their ſize runs in general to the middle ſtature of men, and few or none, are what we could call little. They appeared to us courteous, civil, and hoſpitable; had a great deal of curioſity, and the ſame levity, which is the general character of tropical nations. But, as our ſtay among them was ſhort, we cannot enter into any more particular detail of their character. VARIETIES OF MEN.

We made but half an hour's ſtay at TEOUKEA, one of the low iſles between the Marqueſas and O-Taheitee; and in this time we obſerved the natives to be of a very tawny colour, common to both ſexes. They were a ſtout people, with well-proportioned limbs, and black hair; had on the breaſt, belly, and ſometimes on the hands, ſome figures made by puncturing the body; and were of a middling ſize. They received us with kindneſs; gave us cocoa-nuts and dogs for nails; and, though very numerous and well-armed, did not attempt to inſult us. I cannot, however, ſay what

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they might have done, had we made a longer ſtay, eſpecially as their numbers increaſed every moment.

Thirdly. The inhabitants of the FRIENDLY ISLES are little inferior, if not equal in beauty to thoſe of the Marqueſas. Their complexion, no doubt, is of a darker hue, than that of the commonalty of the natives in the Society-Iſles; though, in my opinion, it partakes of a lively brown, inclining ſo far towards the red or copper colour, as not to deſerve the appellation of ſwarthy. However, many among them, eſpecially the better ſort of people, and the greater part of their women, approach near to the complexion of O-Taheitean fair ones. They are generally of a middling ſtature, or rather above it; and their features regular and manly. The men ſeldom let their beards grow to any length, generally cutting them with two ſharp ſhells; their ears are perforated by two holes, through which they run a ſmall ſtick horizontally acroſs. The outlines of their bodies are not ſo beautifully feminine, as thoſe of the chiefs in the Society-Iſles; but they are compact, well-proportioned, and more muſcular and expreſſive; as moderate induſtry has aſſigned each muſcle its place and ſize, without diſtorting any part of their frame. The ſtature of their females nearly approaches that of the other ſex; none are ſo fat and unwieldy, as many individuals in the Society-Iſles. Their brown complexion becomes

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their regular features, their roundiſh faces, and fine, full, and lively eyes. Their countenance is overſpread with an inexpreſſible ſmile; their ſhapes and outlines are elegant, and all their actions accompanied with eaſe and freedom. Among others we obſerved in the croud, at Tonga-Tabu, a young girl of about ten or twelve years, with the moſt regular features, an oval face, and the ſweeteſt countenance; her eye was bright, lively, and all ſoul; her long, black hair hung negligently down, and was ornamented with bunches of odoriferous flowers; her actions were eaſy, briſk, and free. She had with her five apples, and threw every one of them up into the air, catching them again with amazing activity and ſkill. The character of theſe people is really amiable; their friendly behaviour to us, who were utter ſtrangers to them, would have done honour to the moſt civilized nation. We were preſented in every houſe with food, and the refreſhing liquor contained in the cocoanuts, with a ſpirit of hoſpitality, which is truly patriarchal. All their actions beſpoke a noble mind, and a wonderful, charming ſimplicity of manners. They have, however, all the little faults we obſerved in the O-Taheiteans, though not in the ſame degree. Their utenſils, weapons, manufactures, agriculture, and muſic, beſpeak their inventive genius and elegant taſte. VARIETIES OF MEN.

Fourthly. Next to this nation, we come to a ſet of men, but few in number; for they do not exceed 900 in all, and much inferior

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in every reſpect to thoſe already-mentioned; I mean the natives of EASTER-ISLAND. They are of a tawny complexion, rather darker than that of the Friendly-Iſles: their men have hardly a bit of cloth round their reins to cover their privities, but the women have commonly more covering. They are of a middle ſize, between five and ſix feet, of a ſlender habit of body, having well-proportioned limbs, but not the moſt pleaſing features. The women are not quite diſagreeable, and rather ſmall in proportion. The males are punctured almoſt all over the body, have black hair and thin beards. Their ears are perforated by a large aperture, and part of the outer rim of the ear is ſeparated from the reſt by being cut: in this monſtrous hole, the natives frequently put a ſcroll made of a leaf of the ſugar-cane. They are a friendly, harmleſs ſet of people, and ſome of them exerciſed hoſpitality in its utmoſt extent, and original purity; but they were alſo much addicted to thieving. The ſoil is ſtrong and barren, and has extenſive plantations of potatoes, ſugar-canes, bananas, and eddoes; though wood and water are very ſcarce articles in this poor country. The veſtiges of former plantations on the hills, together with many huge ſtone-pillars, erected near the burying-places, to the memory of their deceaſed chiefs and heroes; ſome of them 27 feet high, are the only remains of the former grandeur and population of this iſle; while ſome toys, finely carved, were evident proofs of their ingenuity and taſte.

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Fifthly. Far remote from this, and all the other isles in the South-Seas, inhabited by the first race of people, we find, near the South-West extremity of this spacious ocean, two large isles called NEW-ZEELAND, peopled by the same race of men. They are of a tawny complexion, still more darkened in their faces by the custom of puncturing, or rather carving into them, the most curious and regular volutes, which hinder, in some measure, the growth of a black and bushy beard. Their size is generally tall, their body strong, and formed for fatigue; their limbs proportioned and well-knit. The knees, however, are very much enlarged, from the constant custom of sitting on their hams in their canoes, and their legs turned inwards. The females are generally thin, a few only have tolerable features; the rest are ill-favoured, though their shape and limbs are not without proportion. Their knees are equally enlarged with those of the men; and they are harshly treated by their husbands, for whom they are obliged to do all the drudgery, as is common in all barbarous nations *. They are hospitable, sincere, and

* According to Strabo, lib. iii. p. 114, and Tacitus de morib. German. c. 15. The ancient inhabitants of Spain, Liguria, Celtica, and Germany, had likewise the barbarous custom of leaving husbandry, and all laborious work to their women, whilst they themselves remained perfectly idle. There are likewise in the present age, many barbarous nations, who treat their women harshly, and leave all drudgery to them. Upon the river Orenoco, this custom prevails. *Gumilla in Orenoco illustrado.* The same is observed in California, by *Father Venegas, Hist. of California*, part 1. sect. 1. The men among the Eskimaux are extremely indolent,

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and generous friends; intrepid and bold warriors; implacable and cruel enemies, carrying their thirſt of revenge even to ſuch a degree of inhumanity, as to feaſt upon their unfortunate priſoners, the wretched victims to a ferocious and uncultured diſpoſition. They are generally men of ſound underſtanding, and have taſte and genius; as proofs of which, may be mentioned, their curious carvings, and other manufactures.

II. The varieties of men belonging to the ſecond tribe or race of people in the South Seas, are all confined within the tropics to its moſt Weſtern parts.

Firſt, The extenſive country of NEW-CALEDONIA though near the continent of New-Holland, is inhabited by a ſet of men, who are totally different from the ſlender diminutive natives of that country, and in many reſpects diſtinguiſhed from all the natives belonging to the firſt tribe, living in the Eaſtern iſles of the South Sea.

dolent, and the women are the greateſt drudges upon the face of the earth. *Lieut. Curtis. Philoſ. Tranſ.* vol. lxiv. P. 11. p. 385. In Tcherkaſſia women cultivate the ground. *Chardin. Voy.* The Bulgarian women were found to work in the vineyards, by *Father Beſcowich, Voyage de Conſtantinople.* p. 93 and 164. In Africa, nothing is more common, than that the moſt laborious part of all work is delegated to women; for this takes place among the Hottentots, according to *Kolben's Deſcr. of the Cape of Good Hope.* vol. i. p. 160. and *La Caille's Voyage au Cap. de B. E.* The women about Sierra Leon were ſeen hard at work by *Keeling, Voy.* The nation of the Giagas are deſcribed to be moſt unfeelingly cruel to their women. *Lord Kaime's Sketches of the Hiſt. of Man.* p. 187. Mr. *Falkner* obſerved of the women among the Puelches, Tehuelhets, and other Patagonian tribes, that their lives are but one continued ſcene of labour; for, beſides nurſing and bringing up their children, they are obliged to ſubmit to every ſpecies of drudgery. *Falkner's Deſcription of Patagonia.* p. 125.

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Sea. Many of these New-Caledonians are very tall and stout, and the rest are not below the common size; but their women, who appear here again, under the humiliating and disgracing predicament of drudges, are commonly small. They are all of a swarthy colour; their hair is crisped, but not very woolly; * their chins are surrounded with respectable beards, which they now and then tie up in a knot; their features are strong and masculine, the ear-laps are cut and enlarged in the same manner as in Easter Island. I saw one man, who had eighteen tortoise-shell ear-rings of one inch diameter, and three quarters of an inch breadth. Their limbs are

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* As some of my readers, not having seen a variety of nations, may think the distinction between crisped and woolly hair, either improper or insufficient, I must beg leave to observe that the woolly hair of negroes, is not only frizzled and crisped, but likewise that each hair is found to be extremely thin, and proceeding from a root or bulb, remarkably smaller than that observed in other human hair; on this account it is called woolly, and its remarkable thinness probably arises from a too copious perspiration, which carries off likewise many humours, otherwise secreted for the express nutriment and growth of the hair: where this perspiration is not so considerable, it can only crisp and blacken the hair, but not to such a degree as to render it woolly. Perhaps the cause of this difference lies in the greater mildness of the climate, or is founded on the way of living of such a people. For instance, though the natives of *Taheitee*, the *Society Isles*, *Marquesas*, and the *Friendly Isles*, dwell in the same latitude with the *New Hebrides*; yet they have never woolly hair, because they frequently rub their hair and head with coco-nut oil, which hinders the too copious perspiration; and I shall hereafter prove these fair people to be originally descended from a fairer and less swarthy or parched race, whose type or model is commonly preserved in their offspring. Upon the whole, a moderate heat accelerates the growth of human hair; this needs no proof, as it is well known that hair grows stronger in summer than in winter; every body is apprised of the common fact, that the marks of puberty appear sooner with people in hot climates, than with those who dwell in colder regions.

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are ſtrong and active, marked by fine outlines. Their females have generally coarſe features, few having any thing agreeable or pleaſing in their round faces, with thick lips and wide mouths. Their teeth are fine, their eyes lively, the hair finely curled, the body in ſuch as have not yet borne children, is well proportioned, with a flowing outline, and fine extremities. The generality are of a mild and good natured temper, ready to pleaſe their gueſts in every thing in which they can be ſerviceable: but the ungrateful ſoil affording them only a ſparing ſubſiſtence, and that too, not to be procured without much labour, they could not ſupply us with any roots or vegetables; and we were obliged to provide them with the firſt dog and bitch, and the firſt boar and ſow, which in time to come may perhaps ſupply them with a new and acceptable change of food.

Secondly, The inhabitants of TANNA, one of the New Hebrides, are almoſt of the ſame ſwarthy colour as the former; only a few had a clearer complexion, and in theſe the tips of their hair were of a yellowiſh brown: the hair and beards of the reſt are all black and criſp, nay, in ſome woolly. The generality of them are tall, ſtout, and well made, none of them are corpulent or fat. The features of the greateſt part are manly and bold, and but few are diſagreeable. Their females are of the ſame complexion, have before child-bearing, generally a fine outline, but they are all ill-favoured,

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illfavoured, nay, ſome are very ugly: I ſaw but two, who had leſs harſh lineaments, and a ſmile upon their countenance. Both ſexes have large holes in the lap of their ear, and wear ſeveral large rings of tortoiſe-ſhell in them; the *ſeptum narium* is likewiſe perforated, and they wear a ſtick or whitiſh cylindrical ſtone in it. The hair of theſe people is dreſſed in the moſt curious and ſingular manner; for they take a ſmall parcel of their hair, of the thickneſs of a pigeons quill and *queue* it up in the outer rind of a convolvulus, and thus they go on till they have finiſhed the whole, which grows very copiouſly; by this means their heads bear ſome reſemblance to a porcupine covered with prickly quills. Their whole body is naked, and the genitals only, are curiouſly wrapped up in leaves tied by a ſtring, and then tucked up to a rope which they wear round their waiſts. On their breaſts and arms are figures cut in, to which they apply ſome plant that raiſes a ſcar above the reſt of the ſkin. They are a good natured, friendly ſet of men, exerciſing hoſpitality in a high degree. They ſeem to be valorous in encountering enemies, who are equal to them in arms; nay, before they perfectly knew how far our arms were ſuperior to, and more deſtructive than theirs, a ſingle man with a dart or ſling, would often ſtand in a path, and hinder a party of eight or ten of us from going higher up into the country. They were miſtruſtful and jealous in the beginning; but after we had learnt a few words of their language, and con- VARIETIES OF MEN.

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vinced them that we did not intend to do them any harm, they let us freely paſs and repaſs. I have gone accompanied by one or two perſons only, ſeveral miles up the country. I hardly know an inſtance of their ſtealing any thing from us. They ſhewed at times, almoſt as much levity as the other nations of the South Seas; though in my opinion they were in general more grave; however they are lively, briſk, and ready to do any ſervice that lies in their power, or to give any information that is wanted, provided the enquirer can make himſelf underſtood.

Thirdly, The natives of MALLICOLLO are a ſmall, nimble, ſlender, black and ill-favoured ſet of beings, that of all men I ever ſaw, border the neareſt upon the tribe of monkies. Their ſkulls are of a very ſingular ſtructure, being from the root of the noſe more depreſſed backward, than in any of the other races of mankind, which we had formerly ſeen. Their women are ugly and deformed, and as I have before remarked in each of the varieties of men of the ſecond race, they were here likewiſe obliged to act the part of pack-horſes, in carrying proviſions for their indolent huſbands, and to do all the moſt laborious drudgery in the plantations. The hair is in the greater part of them woolly and frizzled. Their ears and noſes perforated, for the inſertion of large rings in the one, and of ſticks or ſtones in the other. Their complexion is ſooty, their features harſh, the cheek bone and face broad, and the whole

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countenance highly disagreeable. Their limbs are slender, though well shaped, and the belly constricted by a string to such a degree, as no European could bear without the greatest inconvenience. The genitals are wrapped in and tucked up, in the same manner as at Tanna and New Caledonia. One of their arms is ornamented by a bracelet fixed on it when young, and which therefore, can never after be removed in grown persons. I observed several among these people, who were very hairy all over the body, the back not excepted; and this circumstance I also observed in Tanna and New Caledonia. They are nimble, lively, and restless; some of them seem to be ill-natured and mischievous; but the generality, of a friendly and good disposition. They seem to love joy and merriment; music, songs, and dances. Though their poisoned arrows had no effect upon our dogs, I am however, not yet clear that they are entirely harmless; if so the natives would not have so anxiously witheld our hands, whenever we wanted to try the points of these infected arrows with our fingers: nor can I conceive for what reason they should take so much trouble in smearing and preserving the resinous substance on the boney points of these arrows: Quiros who saw the same nation, likewise suspected their arrows to be poisoned. I am therefore apt to suspect them to be very cruel and implacable enemies. I cannot at the same time omit to do them justice, in observing that they were not destitute of prin-

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ciples of humanity and equity. We ſaw the greater and more rational part of them extremely cautious in giving us any reaſon for complaint, and to ſuch a degree were they anxious to prevent hoſtilities being commenced by their people, that they ſeem to have been ſenſible of the injuſtice of giving the firſt provocation, which might bring on a retaliation on our ſide; nay, they hindered ſeveral of their people from giving even the leaſt umbrage to us.

Medio vero terræ ſalubris utrinque mixtura, fœcilis ad omnia tractus, magna & in colore temperies, ritus molles, ſenſus liquidus, ingenia fœcunda, totiuſque naturæ capacia.

PLINIUS Hiſt. Nat. l. ii. c. 78.

THOUGH the inhabitants of TIERRA DEL FUEGO belong to neither of the races of men in the South Sea, being moſt probably deſcended from ſome of the natives in South America, yet we cannot entirely paſs them by in ſilence. But finding at the ſame time, that the greater part of voyagers and compilers, and likewiſe thoſe authors who have made uſe of the various accounts of voyagers, frequently confound the different nations on the extremity of South America, I will previouſly endeavour to fix our ideas relative to the various tribes that are to be met with in theſe parts of the world.

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The people at the entrance of the Magellanic Strait were seen and measured by Captain WALLIS: ** he found the stature of the greater part of them, to be from five feet ten inches to six feet high; several were six feet five inches and six feet six, and one of the tallest was six feet seven inches high. Mr. DE BOUGAINVILLE * found none below five feet five or six inches French measure, and none above five feet nine or ten inches: but the crew of the *Etoile* had seen several in a preceding voyage six feet high: these measurements when reduced to the English standard, give five feet ten inches and six feet two inches, but the last amounts to six feet 4.728 inches. Mr. DE LA GIRAUDAIS †, of the Pink Etoile, says, the least of those he saw in 1766 was five feet seven inches French measure, which is above five feet eleven inches English. Mr. DUCLOS GUYOT, ‡ in the Eagle frigate, informs us, that the shortest of the people seen by him in 1766, measured five feet seven inches French measure=5 feet 11.498 inches English: the rest were considerably taller. PIGAFETTA, ‖ in the ship Victoria, saw with Magalhaens at Port St. Julian, people, eight Spanish feet high, which are equal to seven feet four inches English. KNIVET, § who went

** Hawkesworth's Compilation, vol. i. p. 374.
* Bougainville's Voyage, English translation, p. 142.
† Pernetty's History of a Voyage to the Falkland Islands. English translation, p. 288.
‡ Ibid. p. 273.
‖ Pigafetta, ap. Ramusio. vol. i. p. 353 fol.
§ Knivet's Voyage.

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went with Sir Thomas Cavendiſh, in 1592, into Port Deſire, found there, people, that where 16 hands high, which amounts to ſix feet, reckoning a hand at 4½ inches. RICHARD HAWKINS * likewiſe ſpeaks of tall people at Port St. Julian, in 1593, ſo tall that they are often taken by voyagers for giants. There are ſome Spaniards, who pretend that in the back of Chili, are a people of ten or twelve feet high: but as this account is too vague, and has not authority which may be depended upon, we will make no uſe of it. However, from the above mentioned numerous accounts, it appears, that on the continent of America, near Cape Virgin Mary, there is a nation, whoſe individuals undoubtedly are moſt remarkably ſtout and tall, none of them ſeem to be below five feet ten inches, ſeveral are above ſix feet, one was meaſured ſix feet ſeven inches high; nay, according to Pigafetta, ſome are ſaid to be ſeven feet four inches; in the more interior parts of South America, are tribes of a ſize ſtill greater than thoſe who were meaſured by Captain Wallis; for Mr. FALKNER, † who ſpent ſeveral years among theſe nations, deſcribes the great Cacique Cangapol, who reſided at Huichin upon the Black River, as being ſeven feet and ſome inches high, becauſe on tiptoe, he could not reach to the top of his head: and he adds, that he did not recollect ever to have ſeen an Indian that was above an inch or two taller than Cangapol; and the brother of this tall Cacique, was about ſix feet high: theſe brethren belonged to the

* Hawkins's Voyage to the South Seas. London, 1622.

† Falkner's Deſcription of Patagonia. p. 26, 111, 112.

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the tribe of *Puelches*. These nations seldom resort to the sea, or the neighbourhood of the Straits of Magellan, and are therefore little known to such navigators as touch at those unfrequented places. It will perhaps appear to us a strange phænomenon, that a whole nation should preserve that remarkable tall stature. But we are united in societies, where the constant intercourse with foreigners, makes it next to impossible to preserve the purity of races without mixture; and pity it is, that the guiles of art and deceit are so great in one sex, and curiosity, levity, and lewdness, are so common in the other, in our enlightened and highly-civilized societies, that they contribute still more to make the preservation of races precarious. This depravation prevailed so far, that even OMAI became the object of concupiscence of some females of rank. The Puelches, on the contrary, and the other Patagonian tribes, whatever be their names, live in a country, which is little frequented by nations different from their own; their neighbours, the Spaniards, in Chili and Rio de la Plata, having very little intercourse with them, and being happy to live undisturbed from the incursions and depredations of such dangerous enemies. They procure, with great facility, their livelihood by the chace, and from their own numerous herds, in a country rich in pastures, and of immense extent, bounded by the sea, and separated by high ridges of mountains from all other nations. These are the most

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most effectual means of preventing the degeneracy and debasement of their noble and athletic race; and we may conclude from thence, that constant intermarriages in the same tall tribes, render the great size of body more fixed, and invariably settled; nor must it be omitted, that as growth depends on *food*, *climate*, and *exercise*, in these nations, all these circumstances concur to make them a strong, stout, and tall race of men. The chace provides them plentifully with food, which is both varied and salubrious. The climate is moderate, and they have cloth made of the best skins and furrs, to serve them in any season. Lastly, they are seldom at rest, they move and roam over all the immense parts of America, South of the river of Plate, to the very straits of Magellan; they hunt, ride, and learn the use of their arms, and therefore take the most salutary exercise, communicating to their body and its parts sufficient strength and consistence, without crippling their limbs by too early, too violent, or too long continued labour, or starving them into a puny figure, by too close application, drudgery, and the exhaustion of their animal and vital spirits. This argument is likewise confirmed by a curious instance in our Northern climate. The guards of the late king, Frederick William of Prussia, and likewise those of the present monarch, who all are of an uncommon size, have been stationed at *Potzdam*, for fifty years past. A great number of the present inha-

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inhabitants of that place are of a very high ſtature, which is more eſpecially ſtriking in the numerous gigantic figures of women. This certainly is owing to the connections and intermarriages of the tall men with the females of that town.* Having therefore ſtated both the probability and reality of ſuch a tall race of men in Patagonia, from the beſt authenticated teſtimonies of reſpectable writers, and from arguments founded in nature; I ſhall take leave of this ſubject with the obvious remark, that it is as unjuſt as it is illiberal to rail at thoſe who are ſtill of opinion, that ſuch tall people are found on the extremity of South America. VARIETIES OF MEN.

To the South of the ſtraits of Magalhaens, on Tierra del Fuego, are a tribe of people apparently much debaſed, or degenerated from thoſe nations which live on the continent. Their broad ſhoulders and cheſts, large heads, and the general caſt of their features, would prove them to be deſcended from the men living next to them, though that faithful and intelligent writer, Mr. *Falkner* had not informed us, that they belonged to the *Yucanacunnees*.† But at the ſame time I ſhall likewiſe obſerve, that it appears from the accounts mentioned before, that the tall race

* Though I have been myſelf at Potzdam, it is however ſo long ago, and at ſo early a period of life, when people are not mindful enough, or capable of making obſervations, that I never took notice of it; but I owe this information to a gentleman whoſe ſpirit of obſervation, and literary talents make his authority indiſputable.

† Falkner's Deſcription of Patagonia, p. 91, 111.

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of men ſeen by Admiral Byron, Captain Wallis, Mr. Bougainville, Mr. de la Giraudais, and Mr. Du Clos Guyot, were all provided with horſes, of which all the families of the *Yacana-cunnees* are deſtitute; for which very reaſon they derive their name; *Yacana-cunnee*, ſignifying *footmen*: and as thoſe obſerved by Captain Cook in his firſt voyage, * and by ſeveral Dutch, † and French navigators, ‡ had no horſes, and commonly navigated bark canoes, the above aſſertion of Mr. Falkner becomes more confirmed. Nevertheleſs it may be very poſſible, that the inhabitants of the more Weſtern parts of Tierra del Fuego, may be deſcended from ſome branches of the *Key-yus*, a tribe of the *Huilliches*, who belong to the nation of the *Moluches*; *and are rather of low ſtature, but broad and thick ſet.* ‖ And really ſomewhat ſimilar to them were the few people, whom we met with at Chriſtmas Bay. We found them to be a ſhort, ſquat race, with large heads; their colour yellowiſh brown; the features harſh, the face broad, the cheek-bones high and prominent, the noſe flat, the noſtrils and mouth large, and the whole countenance without meaning. The hair is black and ſtraight, hanging about the head in a ſhocking manner, their beards thin, and cut ſhort. All the upper part of the body is

* Hawkeſworth's compilation, vol. 2. p.

† Recueil des Voyages pour l'Etabliſſement de la Comp. des Indes Orientales. v. 4.

‡ Bougainville's Voyage.

‖ Falkner's Deſcr. of Patagonia, p. 112.

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is ſtout, the ſhoulders and cheſt broad; the belly ſtraight, but not prominent; and the ſcrotum very long. The feet are by no means proportioned to the upper parts; for the thighs are thin and lean, the legs bent, the knees large, and the toes turned inwards. They are abſolutely naked, and have only a ſmall piece of ſeal-ſkin hanging down and covering part of their backs. Their women are much of the ſame features, colour, and form as the men, and have generally long hanging breaſts, and beſides the ſeal-ſkin on their backs, a ſmall patch of the ſkin of a bird or ſeal to cover their privities. All have a countenance announcing nothing but their wretchedneſs. They ſeem to be good-natured, friendly and harmleſs; but remarkably ſtupid, being incapable of underſtanding any of our ſigns, which, however, were very intelligible to the nations of the South Sea. We could obſerve no other word diſtinctly, than that of *peſſerai*, which they frequently repeated, in a manner to make us believe they intended to ſignify that they are friends; and that they find a thing good. When they talked, I particularly remarked, that their language included the *r*, and an *l*, preceded by an Engliſh *th*, ſomething like the *Ll* of the Welſh, and many other liſping ſounds. They ſtunk immoderately of train-oil, ſo that we might ſmell them at a diſtance; and in the fineſt days, they were ſhivering with cold. Human nature appears no where in ſo debaſed and wretched a condition, as with theſe miſerable, forlorn, and ſtupid creatures.

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SECTION III.

On the CAUSES of the DIFFERENCE in the RACES of MEN in the SOUTH SEAS, their ORIGIN and MIGRATIONS.

Inde Venus varia producit sorte figuras:
Majorumque refert vultus, vocesque comasque. LUCRETIUS.

CAUSES OF VARIETIES.

HAVING stated the differences of colour, size, habit, form of body, and turn of mind, as observed in the various nations of the South Sea, it remains to assign the most probable and the most reasonable causes of these remarkable differences of the two races. This would be an easy task, by having recourse to holy writ only, and from thence laying it down as a fundamental position, that all mankind are descended from one couple; for it must then follow that all are of one species: and that all varieties are only accidental. But in this age of refinement and infidelity, some modern writers use every possible means to invalidate the authority of revealed religion, and though they employ the scripture, when they endeavour to support their own unphilosophic opinions, they never admit arguments taken from thence in others: and if we look around we find so general a tendency in all ranks of men towards saying and writing new and uncommon things, that

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the generality of literary productions teem with the most eccentric and monstrous opinions. CAUSES OF VARIETIES.

Velut ægri somnia, vanæ
Finguntur species. HORATIUS.

Some therefore divide mankind according to its colours into various species; others, instead of being contented with bringing all men under one kindred, choose to extend the human species even to buran-outangs, a kind of well known apes from the East-Indies.* This certainly enlarges the subject, and renders the discussion more intricate, and the arguments more varied and difficult.

I could easily appeal to common sense, and to reason as the great characteristic, exclusive privileges of mankind, which are not found in any of the quadrupeds, though some of them are misrepresented as being rational in an eminent degree; I could from the very helpless and defenceless state of children, when they are first born; from the long duration of that state, from the want of instinct, or connate faculty of defending themselves again external injuries, or of finding and choosing salubrious food, &c. &c. infer, that man was originally intended for a being living in society, who should be taken care of and educated by others, and who has therefore received the

* The author of the *Origin and Progress of Language*, v. i. p. 289, says: The ouran-outangs are proved to be of our species by marks of humanity, that I think, are incontestable: and likewise p. 175.

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CAUSES OF VARIETIES.

the embryo of reaſon improvable by the various degrees of education. It might be proved from the organs and the gift of ſpeech in men, who are alone capable of this language of reaſon, that they ought to be wholly diſtinguiſhed from all animals; as every ſpecies of the brute creation is deſtitute of the variety, power, and extent of voice and articulation: and though endued with paſſions, and poſſeſſing the advantages of a mechanical ſenſation, are ſtrangers to the exerciſe of reaſon, the formation of ideas, the language of the heart, and the refinement of moral ſentiment.* I could have recourſe to the Hallers, the Hunters, the Daubentons, the Le Cats, the Meckels, the Campers, and all the great anatomiſts of this and former ages, and with them prove from the ſtructure of the brains and from the ſkulls, from the occipital hole, from the connexion, movement, ſtructure and length of the cervical vertebræ, from the ſtructure and ſhortneſs of the pelvis, the breadth of the ilia, the narrowneſs of the iſchia, from the form and ſtructure of the acetabulum, and the head of the femoral bones, from the ſtructure and connexion of the muſculus gluteus with thoſe of the legs, from the whole compages and ſtructure of the feet and their parts, from the number and ſtructure of our hands, and many other wonders of our frame, that man is the only creature of the claſs which ſuckle their young ones, who is intended to walk erect: † for though, perhaps, apes

* Mr. *Court de Gebelin*, Plan General du Monde Primitif, p. 10.

† *Blumenbach* de generis humani varietate nativa. Gotting, 1776, 8vo. and *W. Hunter*, de eodem Argumento. Edinburg. 1776, 8vo.

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apes and monkies accidentally walk erect; it is not, however, natural to them, and they prefer crawling on all fours; and though even men in a wild ſtate, have accuſtomed themſelves to walk on all fours, it has been obſerved, that this habit cauſed a preternatural tumour of the hypochondria. * But I ſhould be obliged to repeat and to tranſcribe the arguments, ſo ably ſet forth by the moſt learned men, which, though they are known by the ſtudious, nevertheleſs remain as unknown to the pretenders of learning, as if they never had been publiſhed: for it is the fate of ſcience to be only ſkimmed by the witty faſhionable writers, but never to be thoroughly ſtudied and meditated: I cannot therefore enter into any ſerious argumentation with the patrons and advocates of the long exploded opinion, that monkies are of the ſame ſpecies with mankind. I appeal rather to an argument taken from the better half of our ſpecies, the fair ſex; we all aſſent to the deſcription which Adam gives of his partner; a creature

CAUSES OF VARIETIES.

- - - - - - - - - So lovely fair,
That what ſeem'd fair in all the world, ſeem'd now
Mean, or in her ſumm'd up, in her contain'd,
And in her looks; which from that time infus'd
Sweetneſs into his heart, unfelt before,
And into all things from her air inſpir'd,

* Tulpius, obſ. IV. 10.

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CAUSES OF VARIETIES.

The ſpirit of love, and amorous delight.

Grace was in all her ſteps; heav'n in her eye,
In every geſture dignity and love.

MILTON.

I cannot think that a man looking up to this inimitable maſterpiece, could be tempted to compare it with an ugly, loathſome ouran-outang! If he ſtill in good earneſt be of this opinion, the whole heavenly ſiſterhood of Eve's fair daughters ought for ever to exclude him from their bright circles: and in caſe he then perſiſts obſtinate, may none but ouran-outangs vouchſafe and admit his embraces.

The next claſs of writers repreſent the inhabitants of Greenland, and thoſe of Senegambia, as beings ſpecifically different from thoſe of Europe or Tcherkaſſia: * and, indeed, if we are at once to make a ſudden tranſition from the contemplation of the faireſt beauty of Europe to that of a deformed negro; the difference is ſo great, and the contraſt ſo ſtrong, that we might be tempted to think them of a diſtinct ſpecies: but if we examine the inſenſible gradations, in the form, habit, ſize, colour, and ſome external differences, we ſhall find that they are by no means ſo widely remote from each other in the ſcale of beings, as to form ſeparate ſpecies.

Ana-

* Voltaire, Philoſophie de l'hiſtoire & queſtions ſur l'Encyclopedie, tom iv. & tom vii.

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Anatomically conſidered, they perfectly agree, in all the material great parts of their frame, and even in the particulars of their ſtructure, and conſequently they cannot conſtitute different ſpecies. For conſidering that if the moſt remote tribes of mankind cohabit together, they always procreate children ſimilar to their parents and capable of procreating others, the difference cannot be ſo material; eſpecially if we remark, that by continually repeated marriages of a Mulatto (who is the offspring of a black and a white perſon) with white perſons, the progeny after each marriage, becomes fairer and fairer, ſo that at laſt not the leaſt difference is obſervable; or that if the Mulatto marries a black perſon, their offſpring is blacker, and after a few inter-marriages the race is reduced to abſolute negroes: after theſe remarks, I ſay it muſt become more and more evident to minds free from prejudice or rancour againſt religion, *that all mankind, though ever ſo much varied, are, however, but of one ſpecies.* If therefore this claſs of antagoniſts, ſhould deny the ſcripture that veneration, in which it is held by Chriſtians, they cannot, however, refuſe it with any colour of juſtice, the authority of an old hiſtorical account; and as ſuch we find it corroborates ſtrongly the above reſult of philoſophical enquiry, by telling us, *that all mankind are deſcended from one couple.*

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If all mankind be of one ſpecies, and ſprung from the ſame original ſtem, how then does it happen that the negroe of Senegal is ſo

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different from the inhabitant of the North of Europe? What occaſions the inhabitants of O-Taheitee to be ſo much diſtinguiſhed from the Malliçoleſe? We have hinted before, that theſe two varieties of men in the South-Seas, are deſcended from two diſtinct races. This is not deciſive, and only leads us further into the ſame diſcuſſions, and requires us to ſhew what cauſes have produced theſe two diſtinct races or varieties of men?

The queſtion cannot be diſcuſſed unleſs we conſider the ſubject under various heads. The differences are either obſerved in the organic part of man, or they reſpect his mental and moral faculties: of the laſt we ſhall treat at large in ſubſequent ſections; at preſent we intend to confine ourſelves to the corporeal varieties, conſiſting in, 1ſt, colour; 2d, ſize; 3d, form and habit; and 4th, peculiar defects or exceſſes, or modifications in certain parts of the human body.

Firſt, The COLOUR of the human body depends no doubt upon theſe three great cauſes: 1ſt, expoſure to the air; 2d, the influence of the ſun; and 3d, ſome particular circumſtances in the mode of living. From the beſt enquiries ſet on foot by anatomiſts, it appears, that all the difference of colour lies in the human *ſkin*, and eſpecially in the outer integument called the *cuticle*, which again is conſidered by them under the two denominations of *Epidermis* and *Malpighi's reticular membrane*. In white people, the *Epidermis* is a very thin, pellucid, indurated lamella, tranſmitting the colour of the

the *reticular membrane* immediately lying under it, which is a white or colourleſs, viſcous or ſlimy ſubſtance: whatever colour the ſubſtance has which is immediately under the Epidermis, that colour appears and becomes viſible to the eye. The blood ſuddenly mounting into the blood veſſels of the face, tinges the ſame with a vermillion bluſh. The blood being coloured by the extravaſated bile, cauſes the yellow colour of the *jaundice*. The yellow lymph depoſited in the cutaneous vaſcula, imparts the yellow tint of thoſe who in the Weſt Indies are afflicted with the *yellow fever*. The tattowing of the O-Taheiteans, and gunpowder accidentally forced into the ſkin, forms a black or blueiſh appearance. And in negroes, the late ingenious Mr. *Meckel* * diſcovered the reticulum of Malpighi to be black; but the medullar ſubſtance of the brain, the pineal gland, and the ſpinal marrow, together with the *plexus nervi optici*, he found grey and blackiſh. Others † have found the blood of negroes to be deeper coloured than that of white people. The ancients ‡ knew that the ſpermatic liquor of negroes is of a dark hue, and this curious obſervation is confirmed by moderns. || In a word, we find, that many of the fluids in negroes are tinged darker, and ſuch of their ſolids as are of a tender and delicate texture,

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* Meckel in the Memoires de l'Academie de Berlin, 1753.
† Towns in the Philos. Trans. on the blood of negroes.
‡ Herodotus Thalia, No. ci.
|| Le Cat Traité ſur la couleur de la peau.

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texture, are likewiſe coloured blackiſh. *Meckel* ſuſpects, that the blueiſh liquor which colours the medullary ſubſtance of the brain, and ſo eaſily evaporates in negroes, contributes towards the dark complexion of the mucous membrane of the cuticle, being ſecreted by the cutaneous nerves into the viſcous reticular ſubſtance.

But let us now inveſtigate the cauſes of this phænomenon in negroes; we have already indicated the three moſt ſtriking cauſes; the *expoſure to the air*, is undoubtedly one of the moſt powerful: for do we not ſee this daily proved in our own climate; our ladies, and other people who are little expoſed to the action of the air, have a fair complexion; whereas the common labourers are brown and tawny; nay our bodies furniſh us with ſufficient proofs; thoſe parts which are conſtantly covered, are fair and delicate, but the hands being conſtantly expoſed to the action of the air, acquire a darker hue. The negroes live in a climate which permits them to wear little or no covering at all; accordingly, we really find all the negroes naked, or very ſlightly covered, which undoubtedly muſt increaſe the black colour of their ſkin. The Taheiteans, the faireſt of all the iſlanders in the South Sea, go almoſt conſtantly dreſſed and covered. The inhabitants of Tanna, New Caledonia, and Mallicollo, on the contrary are always naked, and expoſed to the air, and therefore infinitely blacker than the firſt.

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The *operation of the Sun* is undoubtedly another great cauſe of the dark hue in negroes; we find that nations in the ſame proportion, as they approach the equator, likewiſe become darker coloured; however, this obſervation is not quite univerſal, and ought to be modified under many circumſtances. Inhabitants of iſlands are ſeldom ſo black as thoſe of great continents; in Africa, between the tropics, the Eaſterly winds prevail the moſt; and as in Abyſſinia theſe winds come over a large ocean, where they are mitigated and cooled in their paſſage, the inhabitants of that country are not ſo black as thoſe about Senegal, which is ſituated in the broadeſt part of Africa, and where the Eaſterly wind having paſſed over the burning ſands of the immenſe continent, is become infinitely more fiery and parching than in any other part. A higher expoſure above the ſurface of the ſea, makes a great difference in the temperature of the air; the inhabitants of Quito in Peru, though living under the line, are by no means black or ſwarthy. The vicinity of the ſea, and its refreſhing and gently fanning breezes, contribute greatly to mitigate the power of a tropical ſun. This cauſe cannot be applied to the difference of colour in the Taheiteans and the Mallicoleſe, as both nations enjoy the ſame advantage.

But the *peculiar modes of living* likewiſe, ſtrongly co-operate with the above cauſes, in producing the many changes of colour in the human ſpecies. The Taheiteans are conſtantly cleanly, and practiſe

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tiſe frequent ablutions, encreaſing by this ſimple elegance the fairneſs of their complexions, though they live within the tropics. The New Zeelanders living in the temperate zone from 34° to 47° South latitude, are more tawny, which may be in part aſcribed to their uncleanlineſs, abhorrence of bathing, and ſitting expoſed to ſmoak and naſtineſs in their dirty cottages.

Secondly, The *ſize* of the natives of Taheitee, and all the iſles peopled by the ſame race, certainly diſtinguiſhes them from the tribes in Mallicollo; however this difference is not ſo general in theſe nations, as to extend even to Tanna and New Caledonia, where we found many very tall and athletic perſons. But the chiefs in the Society Iſles, again diſtinguiſh themſelves from the reſt of the inhabitants, by their tall ſtature and corpulence. According to the doctrines of thoſe who are ſkilled in philoſophy, growth and ſize depend chiefly upon climate, food, and exerciſe.

The *climate* is either warm or cold. Heat adds to the action of the heart a ſtimulus, and accelerates its pulſation; and ſince in a warm climate, the ſolids are more relaxed, than in a cold one, the impulſe of the blood in the arteries finds leſs reſiſtance, and therefore more powerfully expands the whole frame of the body; becauſe, every function of the parts and ſecretion of the liquids, is promoted with greater vigour. This we find conformable to experience, for in hot climates mankind grows more powerfully, and attains

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earlier maturity and puberty. On the other hand, cold aſſuages the ſtimulus, and conſtricts the fibres, which naturally throws the whole ſyſtem into a torpor or languid ſtate. The heart does not act powerfully enough to carry on the functions with that vigour which is required, not only to accelerate growth, but likewiſe to overcome the greater reſiſtance cauſed by the rigid ſtate of all the ſolid parts. We find in conſequence of theſe principles, the poor inhabitants of Tierra del Fuego, a ſmall race of people, though deſcended from tribes, who, on the continent of South America, in a milder climate, and more happy circumſtances, are very tall and athletic. CAUSES OF VARIETIES.

Food another great article, both as to *quantity* and *quality*, exerts its powerful influence upon ſize and growth. The great abundance and excellence of tropical fruits and roots, together with a variety and plenty of fiſh, and now and then a fowl, a hog, or a dog, contribute to the luxuries of the table of Arees and other people of rank, in the Society Iſles; and as they are uſed to indulge very much in theſe luxuries, we find them remarkably tall, ſtout, and athletic. The Towtows have only the bare neceſſaries; and we were informed that now and then there are years of ſcarcity, when the poorer ſort of people are driven to great diſtreſs; but the Arees feel nothing of theſe inconveniencies. The Towtows never, or at leaſt very rarely partake of the feaſts, where pork is devoured.

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devoured by the chiefs, but muſt reſt contented with the more homely vegetable fare, and think themſelves fortunate, if they catch ſome fiſh, or collect ſome wretched ſmall ſhell fiſh, and even blubbers. In the Marqueſas animal food is more ſcarce in proportion; nor are the iſlands upon the whole, overſtocked with other eatables: for which reaſon we found, that though the natives were not ſmall, very few however, if any, were ſo tall and ſo athletic as on the Society Iſles, and above all, the difference between Arees and Towtows was not ſo ſtriking. In the Friendly Iſles, the abundance of vegetables is great, becauſe private property has been the cauſe of a higher degree of cultivation; and animal food ſeems likewiſe to be plentiful: here however, the diſparity in the ſize of Arees and Towtows is not ſo great as in the Society Iſles. In New Zeeland, the inhabitants are in general well provided with fiſh, and they are not without extenſive plantations of roots in the Northern iſle; nor do they ſeem famiſhed or ſtinted, as the greater part are tall and ſtrongly built. The iſles of Tanna and New Caledonia have plenty of vegetable food, though little of the animal kind; nay, in New Caledonia, they had before our arrival, neither dogs nor hogs; but the extenſive reefs ſurrounding their iſle, afford them great plenty of fiſh: this circumſtance no doubt, contributed to the formation of their ſtrong and tall bodies. Laſtly, the Mallicoleſe ſeem to have plantations of all kinds of fruit

fruit in great abundance, ſome hogs, fowls, and plenty of fiſh, but they are the only nation who ſeemed not to be benefited by this affluent and excellent food; nor could we aſſign the reaſons of their diminiſhed ſize. The inhabitants of the Weſtern parts of Tierra del Fuego, have doubtleſs no other food than what the ſea affords them, which is very precarious in ſo high a latitude, eſpecially in ſtormy weather. Of vegetables, they have only a few berries; which ſeems to indicate, that from time to time they are diſtreſſed, and their wretched appearance does not contradict it; their diminutive ſize, and ſmall thin legs and thighs rather prove that they are famiſhed and ſtinted: nor can the half rotten pieces of raw ſeals-fleſh and fat be very ſalubrious and nutritive; which we ſaw them devour with a voracity that did not indicate either the abundance or the excellence of their proviſions. CAUSES OF VARIETIES.

Exerciſe in a moderate degree, is abſolutely neceſſary to give the various parts of the human frame, ſtrength and due conſiſtence. *Inactivity* hinders the ſecretion and circulation of the fluids, neceſſary for the increaſe of the body, and therefore cauſes in young people a weakly conſtitution, and flaccid limbs, without ſtability, conſiſtence, or vigour. *Violent* labour is equally hurtful in regard to the increaſe of the body; for too long an exertion of muſcular fibres in young men cauſes a rigidity, and entirely exhauſts the vital powers. Let us only caſt an eye on the wretched objects,

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who, from their infancy toil in confinement, and obſerve their diſtorted, diſproportioned limbs, their ghaſtly faces, and their puny ſtinted ſize. On the contrary, the whole body acquires by a moderate and equal uſe of all our parts, a conſtitution which is gradually ſteeled againſt decay and diſeaſes: an equal ſhare of agility is imparted to all the limbs, which knits the joints to their due conſiſtence and ſtability. The inhabitants of the South Sea iſles, are by their lively temper in their early age prevented from being inactive. The happineſs of their climate, the fertility of their ſoil, the luxuriance of vegetation, and the fewneſs of their wants, alſo make too great an exertion unneceſſary: it is therefore *moderate exerciſe* which, among many other happy circumſtances, contribute to form theſe tall and beautiful figures, which are ſo common among them.

Thirdly, Form and *habit*, are likewiſe ſubject to the ſame influence of climate, food, and exerciſe; this ſpares us the trouble of repeating the above mentioned arguments: for it is evident that heat dries the limbs and whole frame of body in the Mallicoleſe, the inhabitants of Eaſter-Iſland, the Marqueſas, the Low Iſlands, the Towtows and lower ranks of people in the Society and Friendly Iſles, who all go naked, and are much expoſed to air and ſun: hence, they become thin and ſlender; for even their bones are not ſtrong, but ſolid and hard. On the other hand, cold climates give

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give a more ſoft, ſpungy and ſucculent habit of body; which is eaſily obſervable in the people of Tierra del Fuego, who are a thick, ſquat, bony race of men. The New-Zeelanders are likewiſe in a milder climate, fleſhy, boney, and ſucculent, and the Arees and better ſort of people, in the Society and Friendly Iſles, who carefully ſtudy, and endeavour to keep themſelves cool, and avoid as much as poſſible, an expoſure to the heat of the ſun, are ſucculent, fleſhy, and fat. CAUSES OF VARIETIES.

Fourthly, The *peculiar defects, or exceſſes, or modifications of certain parts of the human body* have endemial cauſes, dependent upon peculiar cuſtoms, which ſometimes are obvious, but at other times not eaſily inveſtigated, eſpecially when the obſerver has not more time to ſtudy them, than we had. However, we will point them out, and leave it to others to make further diſcoveries.

In Mallicollo, we obſerved that the greater part of the ſkulls of the inhabitants, had a very ſingular conformation; for the forehead from the beginning of the noſe, together with the reſt of the head, was much depreſſed and inclining backward: which cauſes an appearance in the looks and countenances of the natives, ſimilar to thoſe of monkies. Whether the inhabitants uſe ſome art to give the heads of their children this figure, or whether it be owing to ſome other cauſe, or to an original defect of the whole generation, which in the firſt couple from whom this tribe

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deſcended, was modelled by chance or art into that form, and afterwards became inherent and natural to their offspring, it is impoſſible to determine. The inhabitants of Tierra del Fuego, are all a chubbed race, probably becauſe they are deſcended from a ſet of people of large limbs, living on the continent, but being ſtinted by cold, and wants of all kinds, are degenerated into a ſhort, and ſquat figure, which keeps always the original model, or type, in the ſize of the head; a circumſtance almoſt generally obſerved in dwarfs.

The feet are generally thin, and by no means proportioned to the reſt of the body, in the New-Zeelanders, and the people of Tierra del Fuego, and they likewiſe have large knees. This may be eaſily accounted for from their general practice of fiſhing, which confines them for days together to their canoes, without allowing them the uſual exerciſe; and from their conſtant ſitting upon their hams, which ſtretches and expands the knees, and prevents the legs from being furniſhed with the ſupplies neceſſary for the increaſe of thoſe parts. The people in the iſles walk much, but likewiſe ſit on their hams, and we find their knees alſo, and their whole legs enlarged, from the great exertion of thoſe parts, which are not compreſſed and reſtrained as ours, by ſhoes and other articles of dreſs.

The faces are in general ſtrongly marked with large features, and ſomewhat broad, but prominent noſes, in all the iſlanders of the

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the South Seas; and this seems to be, in my opinion, the character of the nation, or tribe, from which they are descended. The more Western tropical isles have inhabitants with less prominent noses, larger mouths, and broader lips, which again must be referred to the original tribe from whence they are derived. CAUSES OF VARIETIES.

The laps of the ears are certainly cut and enlarged by constantly keeping a sugar-cane leaf scrolled up in this hole, in Easter-Island, New-Caledonia, and partly in Tanna. The inhabitants of Tonga-Tabu, and the Friendly-Isles, enlarge the laps of the ears likewise, but without making an incision, and have only two perforations in them, through which they thrust horizontally a small stick, of the thickness of a strong goose-quill. The greater part of the same nation want the two first joints of one, and sometimes both the little fingers, which they cut off as marks of their grief, for deceased parents or relations.

The inhabitants of O-Taheitee and the Society-Isles, are circumcised; but properly speaking, a part of the prepuce is not cut off, but a round smooth stick being thrust into it, it is slit through the upper part, with a bamboo, to which they have given a sharp edge; and then the parts are kept divided, that they may not cover the glans again.

The breasts of the women of O-Taheitee, the Society-Isles, Marquesas, and Friendly-Isles, are not so flaccid and pendulous,

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as is commonly obſerved in negro-women, and as we likewiſe noticed them in all the Weſtern iſlands, in New-Zeeland, and ſome of the females of the lower ſort at the Society-Iſles. This has been lately aſcribed to the manner of ſuckling the children; * but I am of opinion that it cannot be ſolely owing to this; for the women of the Arees never have them ſo pendulous and long. I ſhould rather aſcribe it to the greater relaxation of the body in the women of the lower claſs, who are more expoſed to the air and ſun, than thoſe of the Aree tribe. In the ſame manner the negroe-women, as well as thoſe in the Weſtern Iſles of Mallicollo, Tanna, and New-Caledonia, are for the greater part more expoſed to the air and ſun, being conſtantly naked above the waiſt. The gentle conſtriction of the upper part of the body, by the finer ſorts of cloth in which the O-Taheitean women of quality gracefully wrap themſelves, contributes likewiſe to keep the breaſts high, and to prevent their flaccidity and pendulous ſtate. I ſaw ſome very old fat women in the Society-Iſles, whoſe breaſts were relaxed and enlarged, but by no means long and pendulous, which, however, was a very common circumſtance in all the women of the Weſtern-Iſles, who had borne and ſuckled children.

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* Blumenbach de Generis Humani Varietate Nativa, p. 73.

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The chiefs in the Society-Iſles value themſelves on having long nails on all, or on ſome of their fingers; it is an evident proof of their indolence, and that they are not obliged to work, which would ſoon deprive them of this diſtinguiſhing mark of their pre-eminence; they are, however, very careful in keeping theſe long nails clean, and free from any impurity; the cuſtom of tattowing the faces in ſpirals and various ſcrolls, which prevails in New-Zeeland, and the various figures with which the natives of the Marqueſas puncture their faces, naturally deſtroys the growth of hair, and to this we muſt aſcribe it, that in both places, thoſe who are much punctured, have very little or no beards at all. CAUSES OF VARIETIES.

Theſe are the moſt remarkable particulars which chiefly form the variety of the two great tribes, obſerved by us in the South Sea iſles; from whence may be inferred the powerful influence of climate, food, and peculiar cuſtoms upon the colour, ſize, habit, and form of body, and certain defects, exceſſes, or modifications of the parts; but it muſt be acknowledged at the ſame time, that the cauſes here enumerated are not the only ones, and particularly that climate alone does not produce ſuch extraordinary effects; for we find that the Dutch, who have been ſettled at the Cape of Good Hope, during an uninterrupted courſe of 120 years, have conſtantly remained fair and ſimilar to Europeans in every reſpect; notwithſtanding, if we compare them with the Hottentots, the na-

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tive inhabitants of that part of the world, it appears, that excluſive of the way of living and food, the climate alone cannot occaſion this material and ſtriking variety; nay, that even theſe cauſes, when united, are not ſufficient to produce this effect, as ſome of the very remote Dutch farmers live almoſt in the ſame manner as their neighbours the Hottentots; they have wretched huts, inſtead of houſes; lead a rambling nomadic life, attend their herds and flocks all day long, and live upon milk, the produce of the chace, and the fleſh of their cattle; it is therefore evident, that if climate can work any material alteration, it muſt require an immenſe period of time to produce it; and as our lives are ſo ſhort, our hiſtorical accounts ſo imperfect, in regard to the migrations of the human ſpecies, and our philoſophical obſervations on the ſubject, all of a very modern date, it cannot be expected we can ſpeak with preciſion on the ſubject.

It muſt however be obſerved, that when the fair Northern nations are removed into the hot tropical climates, they themſelves and their progeny ſoon change, and gradually become ſomewhat more analogous in colour, and other circumſtances, to the former inhabitants, whoſe migration is of ſo old a date, that no memorial of it is preſented; ſtill, however, they may be eaſily diſtinguiſhed from theſe aboriginal tribes: it is likewiſe true, that nations removed from the vicinity of the line towards the poles, keep

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their native colour longer without alteration than any other people coming from colder climates, and going to live in hotter regions; but such incidents must always be compared under similar circumstances: for if two Europeans, equally fair, are removed to the same hot climate, and the one is well dressed, and avoids, as much as possible, being exposed to the action of the air, and power of the sun; whilst the other finds himself obliged to work in the open air, and has hardly any rags to cover his skin; they will, of natural consequence, become widely different in colour; moreover, if this diversity in the mode of living be kept up for several generations, the character of both must of course become more strikingly different. If we look upon the inhabitants of Denmark, we find them remarkably fair, and with blue eyes, and red hair. The Bohemians, Poles, Russians, and in general all the Slavonian nations, have a browniſh complexion, dark eyes, and black or brown hair, though some of the latter undoubtedly live in higher latitudes than the former. The reason here certainly is not the climate, but the cause is to be found in their migrations; the Gothic nations are no doubt the most early inhabitants of the North, and therefore have had more time to become gradually fairer, than the greater part of their neighbouring European tribes; and they likewise have had less opportunities of marrying or becoming connected with such Southern nations, as had a brown complexion and black hair.

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The Slavonian nations or Sauromatæ, are later deſcended from the Medes, * a nation formerly living in modern Perſia; they were long ſettled to the North of the Caucaſus and Black Sea, a country which is very hot in ſummer; and in the fifth century they were near the Danube, from whence they gradually ſpread to the countries, which they now occupy: this account rationally reſolves the ſtrange phænomenon, viz. that they ſtill keep the national character, of a Southern tribe. They migrated from the South in a later period than the Goths, and other Teutonic tribes; and have had more opportunities of mixing with Aſiatic tribes of a brown complexion, than the Northern Danes and Goths. This inſtance, I believe, confirms the above aſſertion; and it likewiſe appears from thence, that the fairer nations being expoſed to a more powerful ſun in hot climates, ſoon acquire a browner complexion. However, when they have once attained to a certain ſtandard character, they preſerve it with very immaterial alterations; but I ſuppoſe that they make no conſiderable change in their food, in their mode of dreſſing and living, and that they do not promiſcuouſly intermarry with negroes, mulattos, or other aboriginal or mixed tribes of hot climates, in which caſes, there are juſt reaſons to ſuſpect that their character and complexion muſt gradually degenerate, and

* Diod. Sicul. lib. 2do. & Plin. Hiſt. Nat. lib. vi. c. 7.

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and become more and more debaſed; but if negroes, and other ſwarthy tribes, be tranſplanted into temperate, or nearly cold climates, they do not immediately change, nor do they eaſily become fairer, but preſerve their original complexion for a longer ſpace of time. When they only intermarry in their own race, the change, if any, is imperceptible in their offspring for many generations. I will here only hint, at the probable cauſes of this phænomenon; the tranſition, from being brown in complexion to fair, is, it ſeems, more difficult, than that from fair to brown; the *Epidermis* admits the beams of the ſun and the action of the air, in colouring the *reticulum mucoſum* brown; but when once it is coloured, nothing is ſufficiently powerful to extract the brown colour; and this ſeems to be founded in daily experience; a man being perhaps only one day expoſed to a powerful ſun, ſhall become ſtrongly tinted with brown; when, to remove this hue, perhaps ſix or eight months of cloſe confinement, are not ſufficient. It ſeems therefore more and more probable, that the firſt ſtamen of an embryo partakes, much of the colour, ſize, form and habit of the parents; and that two different tribes, having gradually undergone a different round of climates, food, and cuſtoms; and coming afterwards at different periods of time, and by different ways, into the ſame climate, but preſerving a different mode of living, and being partly ſupported by different food, may nevertheleſs preſerve an

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evident difference in their character, colour, size, form, and habit of body.

If we apply this induction to the two different tribes, whom we found in the South-Sea, it will appear to be highly probable, that they may be descended from two different races of men; and though living in the same climate, or nearly so, might, however, preserve a difference in character, colour, size, form and habit of body; and if I could now prove, by an historical argument, that they really are descended from two different races of men, nothing will be wanting to conviction. How far I shall succeed in this historical argument, will be easily seen from the following observation.

It has always been customary among the more critical and chaste historians, to reckon all such nations as speak the *same general language*, to be of the same tribe or race; unless there be a positive proof to the contrary, in a good, authentic, cotemporary writer; or one who has made enquiries on the subject from old materials, now no longer existing. By the SAME GENERAL LANGUAGE, I understand all the various subordinate dialects of one language. No one for instance, acquainted with the subject, will deny, that the Dutch, Low-German, Danish, Swedish, Norwegian, Icelandic, and the English (in respect to such words as owe their origin to the Anglo-Saxon) are dialects subordinate to the *same original language*, together with the present High-German, and the remains

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mains of the Gothic in Ulfila's New Teſtament. But allowing this, yet we find that theſe dialects differ in many reſpects, each having peculiar words, for ideas which the nation acquired later, after parting from the original tribe; and other words, which they obtained by connexions with, or the conqueſt of, another nation: many words, however, though ſomewhat modified, always preſerve enough of the original type, to ſatisfy the critical etymologiſt, that they belong to the *ſame general language*, as ſubordinate dialects. This ſhort digreſſion will therefore open a way to prove that the five races, which I enumerated as belonging to the firſt tribe, are really deſcended from the ſame original nation; for they all ſpeak a language that has in the greateſt part of their words, a great and ſtriking affinity. CAUSES OF VARIETIES.

I took particular care in collecting the words of every peculiar nation we met with, that I might be enabled to form an idea of the whole, and how far all the languages are related to each other. I ſoon perceived, that in general, the five nations already enumerated, ſpoke a language differing only in a few words, and that for the greater part, the difference conſiſted in a few vowels or conſonants, though the words ſtill preſerved a great affinity; nay, many were abſolutely the ſame in all the dialects. I could therefore no longer doubt, that they were all deſcended from the ſame original ſtem, and that the differences in the language aroſe only from the diffi-

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culty of pronouncing conſonants, which ſome ſounded more eaſily, whilſt others, either changed, or entirely omitted them. When a migrating race found in their new country, new birds, new fiſhes, and new plants, they muſt of courſe find new names for them, which could not exiſt in any other of the cogeneric dialects. The qualities of theſe new animals, the preparation of the new vegetables into food and garments, required other new names, and thus it happened, that their language gradually aſſumed a diſtinct appearance, though after all, it was the ſame with that of the original tribe, being modified only to ſuit the organs of the tribe, and the new objects of their country.

Having now determined, that theſe people uſe the *ſame general language* in various dialects, we have only to prove, that the other nations are of a different race, from that, to which the firſt varieties own their origin; and this is very eaſy to prove in the ſame manner by their languages, which are not only wholly different from the abovementioned general language, but are likewiſe diſtinct from each other: ſo that one might with as much propriety ſay, that they are deſcended from as many different nations, were it not improper to multiply them without neceſſity, and as they really have ſome ſimilarity in their cuſtoms, colour, form, and habit of body.

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If we are desirous of tracing the races of all these islanders back to any continent, or its neighbourhood, we must cast an eye on a map of the South Sea, where we find it bounded to the East by America, to the West by Asia, by the Indian Isles on its North side, and by New Holland to the South. At first sight, it might seem probable, that these tropical isles were originally settled from America, as the Easterly winds are the most prevalent in these seas, and as the small and wretched embarkations of the natives in the South Seas, can hardly be employed in plying to windward. But if we consider the argument more minutely, we find that America itself was not peopled many centuries before its discovery by the Spaniards. There were but two states or kingdoms on this immense continent, that had acquired any degree of population, and made considerable progress in civilization; and they likewise did not originate earlier, than about 300 or 400 years before the arrival of the Spaniards. The rest was occupied by a few straggling families, thinly dispersed over this vast tract of land, so that sometimes not more than 30 or 40 persons, lived in an extent of 100 leagues at very great distances from each other. Again, when the Spaniards discovered some of these islands in the South Sea, a few years only after the discovery of the continent of America, they found them as populous as we have seen them in our days: from whence it appears to be highly improbable, that these

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iſles were peopled from America. If we moreover conſult the Mexican, Peruvian, and Chileſe vocabularies, * and thoſe of other American languages, † we find not the moſt diſtant, or even accidental ſimilarity between any of the American languages, and thoſe of the South Sea Iſles. The colour, features, form, habit of body, and cuſtoms of the Americans, and theſe iſlanders, are totally different; as every one converſant with the ſubject, will eaſily diſcover. Nay, the diſtances of 600, 700, 800, or even 1000 leagues between the continent of America and the Eaſternmoſt of theſe iſles, together with the wretchedneſs and ſmall ſize of their veſſels, prove, in my opinion, inconteſtably, that theſe iſlanders never came from America.

We muſt therefore go to the Weſtward; let us begin with New Holland. All the former navigators, and eſpecially Capt. Cook, in the Endeavour, found this immenſe continent very thinly inhabited. The diminutive ſize of its inhabitants, the peculiarity of their cuſtoms and habits, their total want of cocoanuts, cultivated plantanes, and hogs, together with the moſt miſerable condition of their huts and boats, prove beyond all doubt, that the South Sea iſlanders, are not deſcended from the natives

* In Reland's Diſſ. Miſcellan, vol. iii.

† A Manuſcript Vocabulary of the Brazilian language, obligingly communicated by his Excellency the Chevalier PINTO.

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natives of New Holland. But, what is ſtill more convincing, their language is totally different, as evidently appears from the examination of a vocabulary obligingly communicated to me by Capt. Cook. We have therefore nothing left but to go further to the North, where the South Sea iſles are as it were connected with the Eaſt Indian iſles. Many of theſe latter are inhabited by two different races of men. In ſeveral of the Moluccas is a race of men, who are blacker than the reſt, with woolly hair, ſlender and tall, ſpeaking a peculiar language, and inhabiting the interior hilly parts of the countries; in ſeveral iſles theſe people are called ALFOORIES.* The ſhores of theſe iſles are peopled by another nation, whoſe individuals are ſwarthy, of a more agreeable form, with curled and long hair, and of a different language, which is chiefly a branch or dialect of the Malayan. In all the Philippines, the interior mountainous parts, are inhabited by a black ſet of people, with frizzled hair, who are tall, luſty, and very warlike, and ſpeak a peculiar language different from that of their neighbours. But the outſkirts towards the ſea are peopled with a race infinitely fairer, having long hair, and ſpeaking different languages: they are of various denominations, but the *Tagales*, *Pampangos*, and *Biſſayas*, are

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* Franc. Valentyn Beſchryving van Amboina, ii deel. p. 71,—84. and Dan. Beeckman Voyage to Borneo, p. 43. who calls the Aboriginal people on Borneo *Bajas*.

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the moſt celebrated among them. The former are the more antient inhabitants, and the latter are certainly related to the various tribes of Malays, who had over-run all the Eaſt India iſlands before the arrival of the Europeans in thoſe ſeas. Their language is likewiſe in many inſtances related to that of the Malays.* The iſle of Formoſa or Tai-ovan has likewiſe in its interior hilly parts, a ſet of brown, frizzly haired, broad faced inhabitants; but the ſhores, eſpecially thoſe to the North, are occupied by the Chineſe, who differ even in language from the former. The iſles of New Guinea, New Britain, and Nova Hibernia have certainly black complexioned inhabitants, whoſe manners, cuſtoms, habit, form, and character, correſpond very much with the inhabitants of the South Sea iſlands belonging to the ſecond race in Nova Caledonia, Tanna, and Mallicollo; and theſe blacks in New-Guinea, are probably related to thoſe in the Moluccas and Philippines. The Ladrones, and the new diſcovered Caroline Iſlands, contain a ſet of people very much related to our firſt race. Their ſize, colour, habit, manners, and cuſtoms, ſeem ſtrongly to indicate this affinity; and they are according to the account of ſome writers, † nearly

* *Hernando los Rios Coronel*, Relacion de las Iſlas Malucas. *Navarette* Trattados Hiſtoricos de la Monarchia de China. *Gemelli Carreri* il giro del mondo. *Fr. Diego Bergano* Bocabulario de Pampango en Romance, Manila, 1732, fol. *P. Juan de Noceda y el P. Pedro de San Lucar* Vocabulario de la Lengua Tagala, Manila 1754. fol.

† Pere Gobien Hiſtorie des Iſles Mariannes, Paris, 1700, 12mo.

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nearly related in every reſpect to the *Tagales* in Luçon or Manilla, ſo that we may now trace the line of migration by a continued line of iſles, the greater part of which are not above 100 leagues diſtant from each other. CAUSES OF VARIETIES.

We likewiſe find a very remarkable ſimilarity between ſeveral words of the fair tribe of iſlanders in the South Sea, and ſome of the Malays. But it would be highly inconcluſive from the ſimilarity of a few words, to infer that theſe iſlanders were deſcended from the Malays: for as the Malay contains words found in the Perſian, Malabar, Braminic, Cingaleſe, Javaneſe, and Malegaſs,* this ſhould likewiſe imply, that the nations ſpeaking the above mentioned languages, were the offspring of the Malays, which certainly would be proving too much. I am therefore rather inclined to ſuppoſe, that all theſe dialects preſerve ſeveral words of a more antient language, which was more univerſal, and was gradually divided into many languages, now remarkably different. The words therefore of the language of the South Sea iſles, which are ſimilar to others in the Malay tongue, prove clearly in my opinion, that the Eaſtern South Sea iſles were originally peopled from the Indian, or Aſiatic Northern iſles; and that thoſe lying more to the Weſtward, received their firſt inhabitants from the neighbourhood of New Guinea.

* Reland's Diſſertationes Miſcellaneæ, vol. iii.

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We have therefore, I apprehend, probable proofs that these islanders came originally from the Indian Asiatic isles, on which we have pointed out two races of inhabitants, such as we found them in the South Sea isles: it should seem therefore, that these two distinct races are descended from the two distinct Indian tribes. If we had good vocabularies of the various languages spoken in these isles, we should then be enabled to trace their original back to a particular tribe. But as we labour under a deficiency in this respect, I have endeavoured in the annexed table to give a general view of many languages, which of course, must confirm my former assertions. I flatter myself with having done as much as could be expected in my situation, and therefore leave the rest to better instructed, and more enlightened ages.

SECT-

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SECTION IV.

Various Progreſs, which the Nations we ſaw, have made from the Savage State towards Civilization.

QUOD CUIQUE OBTULERAT PRÆDÆ FORTUNA, FEREBAT,
SPONTE SUA, SIBI QUISQUE VALERE, & VIVERE DOCTUS.

Lucretius.

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PREVIOUS to other poſitions, mankind ſeem not originally to have lived in the extremities of what we commonly call the temperate zones; nor to have choſen theſe cold, inhoſpitable climates for their abode. The mild happy climate in, or near the tropics, the rapid growth of animals and vegetables in theſe places; the facility of procuring food, and ſhelter againſt the inclemencies of the weather; the variety and ſucceſſion of fine and wholeſome ſpontanous roots and fruit, all lead us to ſuppoſe that man was originally ſettled there. We ought to be confirmed in this idea, by conſidering that the firſt nakedneſs of man in a ſavage ſtate, is by no means calculated to bear the viciſſitudes and inclemencies of the Northern and Southern extremities of the *temperate*, or the rigour of the two *frozen* zones; and that if ever men are found

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ſettled in theſe unhappy regions, it has been owing either to chance or cruel neceſſity.

The inhabitants of the iſlands in the South Sea, though unconnected with highly civilized nations, are more improved in every reſpect, as they live more and more diſtant from the poles. Their food is more varied, and abundant; their habitations more roomy, neat, and adapted to the exigencies of the climate; their garments more elegant, improved, and ingenious; their population is greater; their ſocieties better regulated; their public ſecurity againſt foreign invaders more firmly eſtabliſhed; their manners more courteous, elegant, and even refined; their principles of morality better underſtood, and generally practiſed; their minds capable of, and open to inſtruction; they have ideas of a ſupreme being, of a future ſtate, of the origin of the world; and the whole contributes greatly to increaſe their happineſs, in its natural, moral and ſocial branches, both as individuals, and as a nation. On the contrary, the wretched mortals towards the frozen zone, are the moſt debaſed of all human beings, in every reſpect. Their food is ſcanty, loathſome, and precarious; their habitations the moſt miſerable huts that can be imagined; their garments rough, and by no means ſufficient to ſcreen them againſt the rigours of the inhoſpitable climate; their ſocieties thin, and without any mutual ties or affection; expoſed to the inſults of all invaders,

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invaders, they retreat to the moſt inhoſpitable rocks, and appear inſenſible to all that is great and ingenious; a brutiſh ſtupidity is their general characteriſtic; and whenever they are the ſtrongeſt, they are treacherous, and act in oppoſition to all the principles of humanity and hoſpitality. May we not then infer from the above premiſes, that man unconnected with highly civilized nations, approaches in more happy climates, nearer to that ſtate of civilization, and happineſs, which we enjoy; that human nature is really debaſed in the ſavages, who inhabit the frozen extremities of our globe, and that their preſent ſituation is as it were, a preternatural ſtate. I wiſh not to be miſunderſtood; the happineſs which European nations enjoy, and are capable of, becomes, on account of the degeneracy of a few profligate individuals, very much debaſed, and mixed with the miſeries, which are entailed upon our civilized ſocieties, by luxury and vice; if therefore the felicity of ſeveral European or Aſiatic nations, ſeem to be inferior to that of ſome of the nations in the South Sea, it is owing to the above-mentioned cauſes, ſince it does not ſeem to follow, that a high degree of civilization muſt neceſſarily leſſen, or deſtroy natural, moral, or ſocial happineſs. PROGRESS OF SAVAGES.

I believe the nations inhabiting the frozen extremities of our globe to be degenerated and debaſed from that original happineſs, which the tropical nations more or leſs enjoy. I was firſt perſuaded into

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into this belief, from the ſtate in which we found the inhabitants of Tierra del Fuego and New Zeeland, and by comparing their ſituation, with that of their neighbours.

The people on TIERRA DEL FUEGO, about Chriſtmas Bay, were not numerous; and if we are to judge from the general appearance of the country, and from the numbers ſeen by other navigators, there cannot be a great population in theſe inhoſpitable climates. Theſe were the Southernmoſt lands, wherein we found human creatures, who not only appeared to us to be wretched, but to be themſelves conſcious of their own miſery, and forlorn ſituation; ſeveral boats, with natives, came to our ſhip, and none of them had any other garment than a piece of Sealſkin, which did not reach ſo far as to cover half their buttocks, and came barely over the ſhoulders; their head and feet, and whole body, were expoſed to a degree of cold in the midſt of ſummer, which appeared to us ſharp, though we were well clad, having found the temperature of the air generally from 46° to 50° of Fahrenheits thermometer; neither the men nor the women, had any thing to cover their privities; their bodies ſmelled highly offenſive from the rancid train oil which they frequently uſe, and the rotten ſeals fleſh which they eat; and I am of opinion, their whole frame of body is thoroughly penetrated with this diſagreeable ſmell. Their habitations conſiſt of a few ſticks, tied together, ſo as to form a kind of

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ſhell, for a low, open, roundiſh hut; they join the neighbouring ſhrubs together, and cover the whole with ſome wiſps of dry graſs, and here and there a few pieces of ſeals-ſkin are tied over; one fifth or ſixth of the whole circumference, is left open for a door, and the fire place; their utenſils and furniture, which we had an opportunity of obſerving, conſiſted of a baſket, a kind of mat-ſatchel, a bone-hook, fixed to a long ſtick of a light kind of wood, for diſengaging the ſhell-fiſh from the rocks, a rude bow and ſome arrows. Their canoes are made of bark, which is doubled round a pliant piece of wood, by way of gunwale, and a few ſticks, of about the thickneſs of half an inch, are bent on the whole inſide of the canoe, cloſe to one another, ſo as to form a kind of ſtrong deck, both for expanding the whole frame of the canoe, and preventing its bottom from being broken by walking on it; in one part of theſe poor embarkations, they lay up a little heap of ſoil, and on it they keep a conſtant fire, even in ſummer. Their food, beſides the abovementioned ſeals, are ſhell-fiſh, which they broil and devour; they were ſhivering, and appeared much affected with the cold: they looked at the ſhip and all its parts with a ſtupidity and indolence, which we had not hitherto obſerved in any of the nations in the South Seas, had all an empty ſtare in their countenances, and expreſſed hardly any deſires or wiſhes to poſſeſs any thing which we offered, and thought it might become deſirable to them; they were

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deſtitute of all convenience or eaſe, ſhewed no ſigns of joy or happineſs, and ſeemed to be inſenſible to all natural, moral, or ſocial feelings, and enjoyments, and occupied with nothing but their wants and wretchedneſs. This little tribe, obſerved by us, I ſuppoſe to be ſome outcaſts of their brethren; for our officers, who landed in Succeſs-Bay, reported, that the people there were much happier than thoſe in Chriſtmas-Harbour. If we again compare them with their neighbouring tribes on the continent, ſuch as they are deſcribed by Mr. Thomas Falkner, who reſided near 40 years among them, we muſt confeſs, that thoſe are in every reſpect ſuperior; they have horſes, and a greater variety of food, ſupplying themſelves by the chace; their garments are better calculated to defend them againſt the injuries of the climate; their arms both offenſive and defenſive, prove genius and an exertion of mind, of which the poor inhabitants of Tierra del Fuego ſeem utterly incapable; they have a kind of civil government, ſome regulations for the ſecurity of their ſocieties; leaders and chiefs are at the head of their tribes in war, and in peace. Their behaviour is by no means inequitable, harſh, or inhumane; their minds ſhew vigour and courage, their language is copious, elegant, and has marks of a peculiar culture. In ſhort they are infinitely leſs wretched than their neighbours on Tierra del Fuego, who, to all appearance, are only degenerated into that forlorn condition in which we found them ſunk.

DUSKY

PROGRESS OF SAVAGES.

DUSKY BAY is the Southernmoſt place on New-Zeeland, we touched at; the latitude of the place where the aſtronomers obſervatory was fixed, being 45° 47′ South. We found this bay, which has ſeveral leagues of extent branching out into ſpacious inlets, ſtocked with many kinds of fowl, crowded with prodigious quantities of the beſt flavoured fiſh, and its rocks covered with numerous herds of ſeals; all which abundance would naturally invite people, who ſolely ſubſiſt upon fiſh and fowl, to ſettle here, and to become very numerous. But we found only three families in all this bay: their habitations conſiſted of a few ſticks ſtuck into the ground, and meanly covered with flags and ruſhes: they had no idea of cultivating or planting; their garments were ſuch as covered the upper part of the body, and left the legs and part of the thighs expoſed, and they ſquatted down to ſhelter them under their clothes, which commonly were remarkably uncleanly; and the families ſettled here, ſeemed to be independent of each other. When we came to QUEEN CHARLOTTE'S SOUND, we found on the ſhores of that equally ſpacious water, four or five hundred people, and ſome of them paid deference to ſeveral old men, as *Tringoboobee*, *Goobaya*, and *Teiràtoo*, who were it ſeems their chiefs. Fiſh were in this place equally abundant, but of a ſort inferior in taſte and goodneſs; wild fowl, eſpecially of the aquatic kind, were ſcarcer, and we ſaw but one ſeal, though our two ſhips

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resided here at different times. The people were clad in the same manner as in the former place; their habitations, especially on their hippas or strong holds, were better, cleanlier, and lined on the inside with reeds; they had no plantations, but they knew the names of *Tarro* and *Goomalla*, which the inhabitants of the tropical isles give to the *Arum esculentum* and the *Convolvulus Batatas*. This, in my opinion, evidently proves that they were descended from a tribe, who had cultivation, and who had lost or neglected this way of supporting themselves, either because they found greater plenty of fish, and animal food; or because they fled their country in so precipitate a manner, that they could not take any roots with them; or lastly, from mere supineness and indolence; for we saw them eat fern roots, a very insipid, coarse, and wretched food. Whatever may be the real cause, the climate would certainly allow of planting *eddoes* and *potatoes*, being in 41°. 5'. South latitude; and it is evident that the natives were degenerated and debased from a more perfect and more happy state. The inhabitants of the Northern isle, who came off to us, had better boats, and were clad in finer garments; but we could not make many observations on their situation, as we saw them only in a transitory manner; however, the published accounts of the preceding voyage, and those which I was favoured with by Capt. Cook, agree in this, that they had very extensive, regular, well-cultivated plantations, inclosed in very firm and neat fences, made of

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of reeds; that they acknowledged the authority of a chief in a district of 80 leagues at leaſt, where our people found juſtice adminiſtered by inferior chiefs; and that they ſeemed to live in that diſtrict in greater ſecurity and more comfortably than in any other part of the iſle. *Hawkſworth, vol.* 3. *p.* 470. PROGRESS OF SAVAGES.

The natural inferences drawn from theſe data, ſeem to prove; that mankind being more numerous in or near the tropics, and very thinly ſcattered towards the cold extremities of our globe, the human ſpecies was originally ſettled in or near the tropics, and from thence ſpread towards the extremities. Secondly, the inſtances given here, evince likewiſe the truth of what we advanced before, *viz.* that the human ſpecies, when unconnected with the highly civilized nations, is always found more debaſed in its phyſical, mental, moral and ſocial capacity, in proportion as it is removed from the tropical regions. It ſeems therefore probable that ſavage nations in cold climates, contract a harſhneſs or rigidity in their fibres and frame of body, which cauſes ſluggiſhneſs, indolence and ſtupidity of mind; their hearts grow inſenſible to the dictates of virtue, honor and conſcience, and they become incapable of any attachment, affection or endearment.

Let us now turn our eyes to O-TAHEITEE, the queen of tropical iſles, and its happy inhabitants, and extend our view to all the Society and the Friendly Iſles. Though we found population to

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be very great in proportion to the extent of country, yet we were led to believe that a much greater number of inhabitants might be ſupported on thoſe iſlands, and in ages to come might be found there, if no accidents ſhould happen, or unleſs ſuch manners and regulations ſhould be introduced as tend to check or ſtop the progreſs of population. The fertility of the ſoil on thoſe extenſive plains, and numerous valleys, the rapid vegetation and conſtant ſucceſſion of coco-nuts, bread-fruit, apples, bananas, plantanes, eddoes, potatoes, yams, and many other fine fruits and roots; the regular diviſion of lands in private property, well and neatly fenced in; the particular care ſhewn by the inhabitants to the dogs, hogs, and fowls, which are their only domeſtic animals; the convenience and neatneſs of their houſes and boats, their ingenious contrivances for fiſhing; the taſte and elegance ſhewn in many of their utenſils and houſhold furniture; their dreſſes ſo well adapted to the climate, ſo curiouſly varied both in their texture and dyes; their delicacy of manners, true courteſy and politeneſs; their chearful and open behaviour; their goodneſs of heart, and hoſpitality; their knowledge of plants, birds, fiſhes, ſhells, inſects, vermes, and all the branches of animated nature; their acquaintance with the ſtars, and their motion, with the ſeaſons and winds; their poetry, ſongs, dances, and dramatic performances; their theogony and coſmogony; the various ranks and regulations of civil ſociety; their eſtabliſh-

ments for defence, and for repelling and retaliating injuries offered to their ſtate; all theſe conſpire to prove that they are infinitely ſuperior to the before mentioned tribes; and even point out the true cauſes of their greater happineſs. The climate certainly contributes a great deal to their felicity, and might be juſtly deemed the main ſource of it. However, as we found farther to the Weſt, new iſles in the ſame happy climate, and in the ſame latitude, the inhabitants of which, were nevertheleſs, infinitely inferior in point of civilization, and more defective in the enjoyments of real happineſs; it ſeems to follow, that there muſt be, beſides the above-mentioned, ſome other cauſe of this remarkable circumſtance.

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All the ideas, all the improvements of mankind relative to ſciences, arts, manufactures, ſocial life, and even morality, ought to be conſidered as *the ſum total of the efforts of mankind ever ſince its exiſtence.* The firſt original tribes no doubt kept up connexions with one another, and thus they propagated and hoarded up uſeful knowledge, eſtabliſhed principles, regulations, and mechanical trades for the benefit of their poſterity. The ſciences, the arts, manufactures, regulations, and principles of Egypt, and of the Eaſtern nations, were known, and partly adopted by the Greeks, from whom the Romans received their improvements; and we have recovered many, which were in uſe among the ancients, after

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they had been long neglected. From Chaldea and from Egypt two remarkable ſyſtems branched out, the one over India, China, and the extremities of the Eaſt, and the ſecond over the Weſt and North. Here and there we are ſtill able to diſcover ſome remains; but in the interior Southern parts of Africa, and over the whole continent of America, few, if any, traces of thoſe ancient ſyſtems, have been diſcovered. The more a tribe or nation preſerved of the ancient ſyſtems, and modified and adapted them to their particular ſituation, climate and other circumſtances, or raiſed new ideas and principles upon the firſt baſe or foundation, the more improved, civilized and happy muſt that tribe or nation be. The more a nation or tribe has forgotten or loſt of the ancient ſyſtems; their ſituation, climate, and other circumſtances, having obliged them to neglect or to depart from them without making up the defect by new principles and ideas, founded on the ſame plan, the more that nation or tribe is found to be degenerated, debaſed, and wretched. Various circumſtances may have cauſed the loſs and neglect of the ideas and improvements of the ſyſtem, which their progenitors or mother-tribe ſtill preſerved; a number of men are obliged for inſtance, on account of inteſtine feuds in a nation, to abandon their native-country, and the climate wherein they were born and educated, in order to place themſelves beyond the reach either of the power or outrage of their enemies; they wander over

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a great ſpace of unoccupied ground, which is ſituated in a colder climate, than that which they formerly inhabited; the tropical fruits which grew in their native country ſpontaneouſly, are no longer to be met with; the roots, which there, by ſlight cultivation, gave them abundance of food, require here a very laborious and toilſome huſbandry, before they yield the bare neceſſaries of life; becauſe vegetation is not ſo luxuriant, ſo rapid, and powerful in climates, remote from the ſun. Let us now ſuppoſe this clan, grown by length of time into a nation; new diviſions ſupervening, force another portion, ſtill further from the benevolent influence of the ſun, where they find none of the ſpontaneous tropical fruits, where even the roots, their former ſupport, will not thrive, on account of the rigours of their winters; they loſe therefore, at once, their ſubſiſtence; and though they were obliged, in their former country, to toil during a ſtated time, they had, however, the ſatisfaction of collecting a certain food; but now, unacquainted as they are, with the ſpontaneous productions of this new climate, which might, perhaps, ſupply them with eatables, they muſt roam over their new country in queſt of precarious food; they try to kill by force or addreſs, ſome animals or birds or to catch ſome fiſh in the rivers or ſeas, to procure a ſubſiſtence; this entirely alters their mode of living; their habits, their language, and I might almoſt ſay their nature; their ideas are quite changed,

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the improvements, which they had in their former ſituation, are neglected and loſt; the tree, from which they formerly made their garments, grows not in this new climate; their retreat was ſo precipitate, that they had not time to take ſome plants or ſhoots with them, nor any of the domeſticated animals, whoſe ſkins afforded them garments in their former country: they however, find themſelves under the neceſſity of procuring ſome covering to ſcreen their bodies againſt the rigours of the climate, and the inclemencies of wind and rain, to which they muſt now be more expoſed than in their former ſituation, their mode of living being quite altered. They find ſome graſs, or the filaments of ſome other plant, or the ſkins of birds and ſeals, to anſwer this purpoſe, and they uſe them accordingly; their rambling way of life, in queſt of food, obtained by the chace or fiſhing, obliges them to change their abode as often as the game becomes ſcarce, or the fiſh leſs numerous; they think it therefore not worth their while to build neat, large, and convenient houſes; a temporary hut, juſt ſufficient to ſcreen them from the keen winds and the frequent ſhowers of rain, ſnow, and hail, is erected by them, in every new place to which they remove. The fathers retain perhaps the names and ideas of things, which they enjoyed in their former ſituation; their children loſe the idea, and the third or fourth generation, forget even the names by which they are called; the

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new objects, which they find and begin to uſe, oblige them to invent new names for them, and for the manner in which they are employed; and thus even the language becomes altered; nay, their way of ſubſiſting, by the chace or fiſhing, obliges them to live in ſmall tribes, diſtant from others, in order to facilitate their ſubſiſtence. Formerly, when moderate huſbandry and the ſpontaneous growth of fine fruits in a happy climate, enabled numerous tribes to live cloſe together, they then enjoyed more leiſure for ſocial life, they had the advantage of being mutually and powerfully aſſiſted, and they communicated their improvements to each other: now they are deprived of the charms and choice of ſociety, which is confined to the few individuals of a family, or a ſmall tribe; they are deſtitute of any aſſiſtance or protection from their friends; expoſed to the fierceneſs of rapacious animals, perhaps to the barbarity of ſome other tribe of ſavages; incapable of undertaking any work which requires the united efforts of a multitude; they make no other improvements, but thoſe which their narrow underſtanding comprehends, and is capable of; there being leſs chance of meeting with a man of genius, in a ſmall, than in a greater number of human beings. Conſtantly intent upon the means of procuring the neceſſaries of life, eſpecially food, every other purſuit, every other knowledge is neglected, and the ideas therefore, which are not connected with the chace or fiſhery, are abſolutely loſt to this, PROGRESS OF SAVAGES.

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race of men. They must therefore of course, by degrees, degenerate into a debased forlorn condition, and all the notions of improvements, the work of ages, and the result of the reason and the wits of thousands be forgotten; their reason, for want of being exercised, is at last brought so low, that nothing but the mere ideas of animal life, the instincts of brute creation remain; strangers to social feelings, and still more so to social virtues, they herd together by custom; sensuality, and the enjoyment of the few wants of nature, make the whole field of their brutish desires; and of that bright image of divinity, of expanded and sublime knowledge, of the consciousness of good and virtuous actions, of the noble and generous struggle in the cause of virtue and social happiness, hardly a few sparks remain.

If we were to sum up the arguments, and evidence which we ought to collect from the above facts, it is certain, that on one side the mildness of the climate contributes greatly to soften the manners of mankind; and the rigours of the extremities of our globe, renders the fibres and whole frame of our bodies more harsh, rigid, and insensible, which undoubtedly operates upon the mind, and the heart, and almost totally destroys all social feelings; on the other side we find, that the influence of the climate far from being the only cause of the degeneracy of mankind on the extremities of our globe, evidently points us out the second

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great cauſe of degeneracy of the human race, the want of education, by which means the moſt uſeful notions, tending to improve our phyſical, mental, moral, and ſocial faculties, are propagated, perpetuated, and laſtly increaſed by new additional ideas. PROGRESS OF SAVAGES.

Before I conclude this chapter, I beg leave to add a few reflections.

We have repreſented the ſavages living on the frozen extremities of our globe, as moſt debaſed, degenerated, and wretched: and it is nevertheleſs certain, that though their condition appear to us forlorn, and they themſeves be in our eyes the outcaſt of the human ſpecies; they do not think ſo meanly of their own ſituation; nay, ſo far from ſuppoſing themſelves unhappy; they rather glory in the advantages of their way of living, and none of them would exchange his cold climate for one that is more temperate, his wretched hut for a comfortable European houſe, nay, not even for the moſt magnificent palace; he thinks his piece of ſeals-ſkin a more becoming dreſs than the beſt ſilks and brocades; nor would he prefer a well-ſeaſoned ragout to a piece of ſtinking ſeals fleſh. To be controuled by wiſe laws and regulations, is what the ſpirit of ſome of theſe rambling barbarians could never brook; and independence, licentiouſneſs, and revenge their favourite paſſions, render them abſolutely unfit for any well-regulated ſociety, and cauſe in them a general contempt for our way of living, where order and

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subordination take place. They think themselves happy, nay, happier than the best regulated nation, and every individual of them is so perfectly contented with his condition, that not even a wish is left in his breast for the least alteration. *

But a mind accustomed to meditation, and able to affix to every thing its true value, must certainly perceive, that this situation of the savage or barbarian, is nothing more than a state of intoxication; his happiness and contentment founded on mere sensuality, is transitory and delusive; the sum of all his enjoyments is so small, so defective in its particulars, and of so little value, that a man in his senses cannot but think himself happy that he was born in a civilized nation, educated in a country where society is as much improved as is possible; that he belongs to a people who are governed by the mildest laws, and have the happiest constitution of government, being under the influence of civil and religious liberty.

If therefore the happiness of the savage is not so eligible, as some philosophers will make us believe, who never viewed mankind in

* This is applicable to the savages of Tierra del Fuego, and the barbarians of New Zeeland: but the inhabitants of O-Taheitee and the Society Isles, are beyond this state. None of the first two races of men, upon the offer being made to them, shewed any desire to go with us to our own country; and there are already seven or eight instances, to my knowledge, of persons from the latter isles, who willingly offered to go with us to Europe.

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in this debaſed ſituation; it is certainly the wiſh of humanity, and of real goodneſs, to ſee all theſe nations brought nearer to a more improved, more civilized, and more happy ſtate, without the addition of thoſe evils, which abuſes, luxury and vice have introduced among our ſocieties. Human nature is capable of great improvements, if men only knew how to proceed in order to effectuate this great and noble purpoſe. The greater part of them are too unreaſonable in their wiſhes, too rapid and violent in their proceedings, and too ſanguine in their expectations. They wiſh this change ſhould take place immediately, their methods for bringing it about are contrary to human nature, and ſometimes they overlook the progreſs of improvement, becauſe it is ſlow. If we conſider the progreſs of man as an individual, from birth to manhood, we find it very ſlow and gradual, though ever ſo much care be taken to improve the body, as well as the intellectual and the moral faculties, and to inſtill early into the mind the ſeeds of ſocial virtue. We can never paſs over the years of childhood, and youth, and make infants men; not even by the moſt accompliſhed education. Thus likewiſe, the approach towards civilization, muſt be left to time; it is a work of ages to bring the mind of a whole nation to maturity. Nor can it be forced or accelerated by the beſt inſtructions. From *animality* nations ripen into *ſavages*, from this ſtate they enter into that of *barbariſm*, before they are

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capable of *civilization*, and how many degrees of refinement does not even this ſituation admit?

Infancy is in individuals, merely animal life. In the ſame manner the loweſt degree of degeneration in collective bodies is ANIMALITY. *Childhood* is undeſigning, harmleſs, and innocent; private property and perſonal ſecurity of others, are ideas which the boy is to be taught when he emerges from infancy, for he knows of no other law than that of the ſtrongeſt. The SAVAGE has likewiſe no idea of the perſonal ſecurity of any other beſides himſelf, nor thinks better in regard to private property: he kills where he is the ſtrongeſt, and he robs where he cannot otherwiſe obtain the poſſeſſion of what he covets. *Adoleſcence* is the age of violent paſſions, breaking out in outrages againſt all the principles of morality; carrying away like an impetuous flood whatever oppoſes its deſires: the youth has the dawning of underſtanding and reaſon, and if the mental faculties are not improved in this ſtage, and the paſſions made ſubſervient to reaſon, he degenerates into profligacy, and brings on his own ruin. The BARBARIAN is likewiſe fiery and violent, without controul and principles, nay, capable of the moſt deteſtable outrages: nations in this ſtate want education and improvement more than in any other. *Manhood* and a *mature age*, are ſimilar to the CIVILIZED STATE, and have therefore ſeveral degrees.

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These remarks will give a general outline of the real condition of these nations, of the improvements which philosophers can with propriety wish for them, and of the progress they may be expected to have made from the little intercourse with Europeans. I have been frequently asked, what improvements and progress in civilization the inhabitants of the islands in the South Sea appeared to me to have made since Europeans came among them. A few years in regard to a nation, are a few moments in a man's life, a man may learn very useful things materially affecting his situation in life in a few hours; but it would be next to impossible to point out in his character, his mode of living, his conversation, and his actions a few hours after this acquisition, the advantages he can or will derive from thence; this holds likewise in regard to nations; a few years cannot bring on a material change among them. We carried hogs and fowls to New-Zeeland, and dogs and pigs to New-Caledonia, dogs to Tanna, Mallicollo, and the Friendly Isles, and goats to O-Taheitee; these animals will no doubt in time cause a material change in the way of living of these nations; but as we could give no more than one couple of goats and a few of the other species of animals, it will require a succession of years before they can multiply, and become so numerous, that every inhabitant may have several of them, and thus be enabled to employ them in food. The use of iron tools is another article,

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which would, in time, become a great improvement to their mechanical employments; but as thoſe tools which we procured for them were by no means in ſufficient number, that every man might be provided with a compleat ſet, the changes which they have produced, are, as yet, very inconſiderable; nay, as theſe iſles have no productions, which might tempt any European nation to ſet on foot a regular and conſtant navigation to them; it is probable, that in a few years they will be entirely neglected; if therefore the iron tools imported, had been ſo numerous, that every man could have had his ſhare, the natives would have entirely laid aſide their own ſtone hatchets, ſtone chiſſels, and other implements, and would, perhaps, by length of time, have forgotten the manner of making them. This circumſtance, muſt of courſe, have become very diſtreſſing to them; uſed to our tools, without poſſeſſing the art of making them, or the ſtill greater art of procuring iron, from whence they might be manufactured, and having laid aſide and forgotten the method of forming their ſubſtitutes of ſtone, they would, inſtead of being improved, have been thrown back ſeveral ages in their own improvements. We did not communicate intellectual, moral, or ſocial improvements to the natives of the iſles; nor could theſe be expected from the crew of a man of war; thoſe who might be deemed capable of enlarging their minds with new ideas relative to ſcience, arts and manufactures, of inſtilling

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inſtilling the principles of true morality and virtue into their breaſts, or of communicating to them notions of a well regulated government, and diffuſing throughout a numerous nation, that ſpirit of charity, attachment, and diſintereſted love of the community, which ought to glow in the breaſt of every reaſonable member of ſociety, had neither time nor leiſure for ſuch an undertaking in the few days of our abode among them, eſpecially as none had a thorough knowledge of the ſeveral languages, and as each had a different purſuit to attend, which had been delegated to him by his ſuperiors, when this expedition was ſet on foot.

SECTION V.

Food, and the Method of Procuring it, by Fiſhing, Fowling, Hunting, and the wild ſpontaneous Fruits.---Savage or barbarous State of a ſmall Number of Men.---Origin of Cannibaliſm.---Means employed by Providence of improving Human Societies.

Sed primum poſitum ſit, noſmet ipſos commendatos eſſe nobis, primamque ex natura hanc habere appetitionem, ut conſervemus noſmet ipſos.

M. Tullius Cicero de Fin. Bon. & Mal. 4.

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HAVING traced the general outline of the real condition of the nations we ſaw in the courſe of our voyage, and endeavoured to aſſign the true cauſes of the remarkable difference

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in their improvements; it now becomes proper to enter into a more detailed deſcription of the particulars relative to their food and population, and the various principles, manners, regulations, habits, and biaſs of mind peculiar to each of the ſeveral tribes with which we became acquainted.

We obſerved in general, that the chief occupation of all the nations, which live towards the extremities of our globe, conſiſts in procuring their ſubſiſtence; all their endeavours, contrivances and ingenuity, center in this great and neceſſary object: cloathing, habitation, ſecurity, liberty, property, and every other concern muſt give way to the firſt.

If we compare the ſituation of the inhabitants of *Tierra del Fuego*, and of the *Eſkimaux*, or *Greenlanders*, every circumſtance proves the latter ſuperior to the inhabitants of the South extremity of America, though theſe have, in many reſpects, the advantage of them in regard to the gifts which nature has beſtowed on their country.

The *Greenlanders* and *Eſkimaux* can procure a variety of food, chiefly of the animal kind, from land and ſea animals. They hunt equally rein dears and whales; kill ſeals and ſea fowl, and likewiſe catch fiſh, eſpecially ſalmon: but the wretched *Peſſerai* is obliged to ſubſiſt chiefly on muſcles and other ſhell fiſh, which he collects by means of a bone hook fixed on a long octangular pole, from the bottom of the ſea, and from the rocks under water.

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We saw the Pesserais eat rotten seal's flesh, and they presented it to us as a great rarity; but though we examined the whole extent of Christmas-Bay in more than one boat, we never saw any seals. It is therefore probable, that they are either very scarce in this part, or that they occasionally migrate to other places, and return to the sound at certain seasons. One man among them had a piece of a guanacoes-skin for his clothing, but amongst thirty or forty, whom we saw, he was the only one. Christmas-Harbour seems to have none of these animals, as its lands consist of small barren isles, without any woods or grassy places, which might afford food and shelter for these animals, and the summits of the hills were at the end of December entirely covered with immense masses of snow. It is therefore highly probable, that those *Pesserais* whom we saw there, remove to other places, where the guanacoes are found. Farther to the East, on *Tierra del Fuego* which consists of a large mass of land, without being divided into so many small islands; we and other navigators observed large woods of fine timber, and extensive plains covered with grass, and if any guanacoes are to be met with on *Tierra del Fuego*, it must be there;* but perhaps those animals are only to be found on

* The Dutch navigators in the Nassau fleet, found some animals on *Tierra del Fuego*, which they called a kind of deer; but they are probably the guanacoes, common on the neighbouring continent. See *Recueil des Voyages faits pour l'Etablissement de la Comp. des Indes Orientales*, vol. iv.

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on the American continent. Our *Peſſerais* therefore, in one or the other caſe, go to the continent, or to the Eaſtern regions of this great cluſter of numerous iſles. This however, proves that they change their abode, and tranſport themſelves to very diſtant places, in order to procure their food, and likewiſe implies that they are much diſtreſſed for the means of procuring it; for they would certainly not remove, if they could provide at all times and ſeaſons a ſufficiency at the place of their abode. We did not obſerve that the *Peſſerais* ever uſed the berries of a kind of ARBUTUS, which, in ſome places, is found in great abundance; nor can we recollect that they made uſe of any other vegetables by way of food, though it is probable that they do not entirely neglect them. On the contrary, the inhabitants of *Greenland* gather ſeveral kinds of berries to live upon, and likewiſe eat a kind of ſea-weed.

The *Peſſerais* whom we ſaw, were without any other covering than that of a ſmall piece of ſeal-ſkin, or a part of a guanacoe-ſkin, hung over their backs, and ſeemed not the leaſt concerned upon expoſing their genitals; the women had only a piece of white birds ſkin about ſix inches ſquare, hardly ſufficient to be called a badge of modeſty; nor was this cuſtom univerſal, for ſome of them were ſeen without it. The Greenlanders on the contrary, are all well provided with ſeal-ſkins, rein-deer-furrs and ſkins of water-

birds;

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birds; and theſe ſkins are further improved into a kind of convenient dreſs, well ſuited to the rigours of their winters; nay, they uſe the guts of certain fiſh and animals for under garments, or as we would call it inſtead of ſhirts and ſhifts; they formerly employed bones of fiſh and birds inſtead of needles, and they ſplit the ſinews of the rein-deer and whale, in order to uſe them inſtead of thread, which they handle with ſo much dexterity and neatneſs, that even our European furriers admire their ſkill. They are not contented with one ſet of cloaths, but on ſolemn occaſions are provided with new ſuits. ORIGIN OF SOCIETIES.

Their habitations are adapted to each ſeaſon; in winter they occupy warm and convenient houſes, built of ſtone, and covered with beams, and a roof, though wood be very ſcarce among them, as they have no other than what is drifted to their ſhores, and thrown up by ſea; they have windows for admitting day-light, made very curiouſly of ſeals guts, and maws of fiſh; the whole inſide is hung with ſkins, and their elevated bed-places are covered with the fineſt furrs; and the entrance is contrived in a convenient and ingenious manner. Their method of dreſſing victuals, over a lamp of train-oil, in a kettle of pot-ſtone; and in a word, all their contrivances are proofs of their ſkill and ingenuity; their greater happineſs, and their enjoyment of the loweſt degree of conveniencies. The ſummer they paſs in neat and convenient tents, regularly

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gularly built of poles, and covered with skins, with a transparent skin hung before the entrance, which admits light, and excludes the wind, rain, and cold. The poor *Pesserais*, on the contrary, wherever they are driven by necessity and hunger, have no other shelter than a few poles stuck in the ground, or small trees, which they find on the spot, tied together by leather straps or bast, and a few bundles of brush-wood fixed over them, by way of covering, all which is encompassed by some old seals-skins; this kind of hut is open at least one fifth or sixth part of the whole circumference, and in this opening the fire is made, so that they remain exposed to the inclemencies of the weather, and to the rigors of the climate, which was far from being mild in the height of their summer. Notwithstanding all this, it appeared to me to be very singular, that a people, having a great quantity of the finest wood, should be so much at a loss, to make their situation a little more comfortable, by employing this timber, in building with it more convenient houses, and stronger boats. It cannot be said that they have no contrivance for cutting and shaping the wood to various purposes, because the poles, to which they fix their bone shell-hooks, are ten or twelve feet long, perfectly strait, smooth and octangular, which, in my opinion, evidently proves their skill in shaping wood; the same observation may be applied in regard to their cloathing; they have seals-skins, fox and guanacoe furrs; I

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ſaw that they had ſewed parts of their ſeal-ſkin or guanacoe-ſkin cloaks, with ſinews or ſmall leather thongs, and yet they were not ingenious enough to carry this invention of ſewing one ſtep farther, by ſhaping their ſkins in ſuch a manner, that they might ſhelter them againſt the inclemencies of their rigorous climate; theſe particulars ſtrongly indicate the wretchedneſs and debaſed condition of theſe people. This miſerable and forlorn condition of the poor *Peſſerais*, appeared dreadful to us, who were accuſtomed to the conveniences of a civilized life: but habit, together with indolence and ſtupidity, render theſe hardſhips ſupportable; and they have hardly an idea that their ſituation can be improved; unleſs we believe that their indolence alone is ſo great, as to check even the leaſt progreſs towards the enjoyment of greater and more deſirable conveniencies; they ſeem to be the victims of the revenge or inſolence of a more powerful tribe, who drove them to this inhoſpitable Southern extremity of the great American continent. All the nations found by the firſt European diſcovery, on the immenſe continent of America, were ſavages, juſt removed one degree from animality, rambling in the vaſt connected foreſts of this land, in ſmall tribes: they all had very little clothing, and lived chiefly upon the produce of fiſhing, or the chace. Only two nations had a kind of civilization, and they lived within the tropics, and their improvements and progreſs towards a civilized

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ſtate, were, according to their own hiſtorical monuments, of a modern date, and probably imported by a few families, whom chance, or cruel neceſſity, had thrown on theſe wild and inhoſpitable ſhores.

Theſe conſiderations lead us to ſome natural inferences, viz. that as the number of inhabitants on the great American continent, was, in general very inconſiderable, their ſtate far remote from civilization, and bordering upon animality; the rigors of the climate, on its extremities ſevere; the food for human beings very precarious; thoſe men who are found on theſe extremities, certainly came from more happy and more civilized regions, and that only neceſſity could make the hardſhips ſupportable, which they of courſe muſt undergo: that the more wretched and forlorn their ſituation is, the ſtronger it proves, that the nation or tribe, of which they are deſcended, had already, in part, loſt the principles of education, common to all happy nations, whom we generally find within the tropics; they muſt likewiſe be few in number, becauſe they are deſcended from a ſtraggling tribe, and are themſelves not very prolific, owing perhaps to the want of natural heat, the harſhneſs of their fibres, the poverty of their juices, and other cauſes, which are the conſequences of their mode of living, and of the conſtitution of their climate. The great Mr. de Monteſquieu

teſquieu * was of opinion, that the nations feeding chiefly on fiſh, were the moſt prolific, becauſe the greaſy, oily, particles of fiſh, ſeem to ſupply more of that ſubſtance which nature ſecretes for the purpoſes of generation, than any other kind of food. This ſingular opinion, though retailed by many ſenſible copiers, † is not founded in nature, or confirmed by experience. In Greenland, ‡ and among the Eſkimaux, ‖ where the natives live chiefly on fiſh, ſeals, and oily animal ſubſtances, the women ſeldom bear children oftener than three or four times; five or ſix births are reckoned a very extraordinary inſtance. The *Peſſerais*, whom we ſaw, had not above two or three children belonging to each family, though their common food conſiſted of muſcles, fiſh and ſeals-fleſh. The *New-Zeelanders* abſolutely feed on fiſh, and yet no more than three or four children were found in the moſt prolific families; which ſeems ſtrongly to indicate, that feeding on fiſh by no means contributes to the increaſe of numbers in a nation, but that there are other cauſes concurring, which promote population. ORIGIN OF SOCIETIES.

From the preceding arguments, it appears that the Peſſerais are wretched on account of the inhoſpitality of their climate, and be-

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* Monteſquieu Eſprit de Loix, book 23, chap. xiii.

† De Saintfoix Eſſais Hiſtoriques ſur Paris, tom. ii. p. 181.

‡ Crantz's Hiſtory of Greenland, vol. i. p. 161.

‖ Lieut. Curtis, in the Philoſ. Tranſ. vol. lxiv. part 11. p. 385.

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cauſe they are deſcended from a degenerated race, and become happy, the remote offspring of ſuch tribes as are ſtill poſſeſſed of the remains of the original ſyſtem of education, of which little or nothing paſſed over with them into Tierra del Fuego.

Wherever we find nations or tribes in nearer or more immediate connexion, with thoſe who had ſtill the ſyſtem of uſeful ideas, perpetuated by education, we likewiſe find the human ſpecies, as it were, in more vigour, and better civilization. The ancient Mexicans and Peruvians ſeem to be deſcended from thoſe nations, whom *Kublaikhan* ſent to conquer Japan, and who were diſperſed by a dreadful ſtorm, and it is probable that ſome of them were thrown on the coaſt of America, and there formed theſe two great empires. The Greenlanders and Eſkimaux, in the very North of America, came later into that continent than any of the other American nations, (the Mexicans and Peruvians excepted,) for they are reckoned to be a foreign tribe, and they appear to be of a different race of men, by the language, the dreſs, the features, ſize, form and habit of body, and manners: probably they came from ſome of the numerous iſles, which form the connexion between America and Aſia. All theſe nations had better regulations and principles than their neighbours, and human nature ſeems with them to have been in more vigour, than with the reſt of the American ſavage tribes; their later connexions with, and deſcent from Aſiatic nations,

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tions, accounts for the remaining ideas of arts and principles of social life, and of civilization; and likewiſe for the laws, regulations and form of government introduced among them; but the *Peſſerais* are in a quite different condition: for being deſcended from the ſtraggling American tribes, who themſelves were much degenerated, they could not derive from them any idea of education, or any principles of ſocial life, nor any regulations approaching to thoſe which are uſually to be met with, in civilized nations. ORIGIN OF SOCIETIES.

We may add to this, that their numbers are few, and that though their country be very little inferior in ſize to one moiety of Ireland, hardly 2000 inhabitants are found on this great extent of land.

In theſe ſmall wild tribes, it is almoſt certain, that the ſtill ſmaller ſocieties, whom navigators have occaſionally found, were nearly related to one another; which makes it probable, that they only keep together becauſe they ſtill find ſome benefit from their union and mutual aſſiſtance; and this makes the Europeans, who are uſed to civil ſociety, believe, that the ties of friendſhip and blood ſtill unite them; but it is quite otherwiſe, for it is not the intereſt of ſavages to form great bodies, in countries that are not rich in food and animal productions; as ſoon as they think themſelves ſtrong enough to ſet up a new family, they ſeparate and remove to parts unoccupied by other families, where they have a proſpect of

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of ſupporting their wives and children, and perhaps a few younger brethren or ſiſters. This evidently points out the true cauſe of the debaſement and degeneracy in ſavages; they can neither profit by the aſſiſtance, nor by the inventions and improvements of others, and the ſmallneſs of their numbers affords but a bad chance for a multiplicity of inventions or improvements. The inſtructions and good advice of long experience are loſt to them, and the conſtant neceſſity of procuring a precarious food for the family, robs them of that leiſure, which is neceſſary for inſtruction, and a more finiſhed education. As ſoon as their numbers increaſe, that the country can no more feed the inhabitants, they muſt of courſe either oppreſs and expel, or kill others, in order to occupy their fiſhing and hunting places; or they are obliged to migrate to an unoccupied country; or they muſt deviſe new methods of procuring food with eaſe for their increaſed numbers. Seldom is their indolence conquered to that degree, that they migrate or become induſtrious, and find out a new kind of food, and a new way of living. Oppreſſion is commonly repreſented to their minds as the eaſieſt and ſureſt method, they therefore diſlodge their neighbours, or put them to death, and take their wives and children for their ſlaves and drudges. Thus grown elated with ſucceſs, and powerful by extent of land, and enjoying thoſe advantages which ſupply them with the means of ſupporting

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themſelves with greater eaſe, and making life ſomewhat more comfortable; they endeavour to extend their dominion, and every ſucceſs enables them to emerge more and more from that ſtate of debaſement in which they were plunged; or if they ſhould be oppoſed, checked, and even routed in the attempt, they will certainly be prompted to exert themſelves again, that they may not loſe that ſuperiority which they had once attained; or they will ſtudy to make the misfortunes which their ambition had drawn upon them, leſs conſequential, and to avert the miſeries which otherwiſe would fall upon them. All this of courſe rouſes their minds from that indolence and inactivity with which they were oppreſſed, and they in every reſpect conquer ſomewhat of that degeneracy to which they were reduced: for the human mind, left to itſelf in a continued courſe of uniformity either in happineſs or wretchedneſs, has very little exertion; but add to it the ſprings of paſſions, which are moſt powerful in ſuch tribes as are leaſt improved in their mental faculties, and we ſhall find it amazing to what length they may carry a ſet of men, who lend no ear to any principles of morality, and who adjuſt their notions of rectitude by the extent of power only. Though naturally this principle cannot carry them very far, becauſe they muſt ſooner or later meet with a powerful oppoſition, from the united efforts of ſuch tribes as will not loſe their liberty; it has however, in general

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ral the benefit of communicating to all the tribes a willingneſs to exert themſelves, to unite the intereſt of more families againſt the oppreſſion of others, and to give them that dawning of civil ſociety, which is alone the great improver and preſerver of human happineſs, in its phyſical, moral, and ſocial ſenſe.

If therefore the ſavages by an happy exertion of their phyſical and mental powers, riſe one ſtep higher in the claſs of rational beings, their ſituation no doubt, becomes upon the whole more improved; but at the ſame time this very ſtate, though more vigorous and more active, often breaks out into ſuch enormities, as make the heart ache, and are humiliating to human nature. New Zeeland offers us an inſtance of this aſſertion: whoſoever caſts an eye upon them with a view to compare their ſituation with that of the Peſſerais, no doubt will allow that of the New-Zeelanders to be greatly preferable in every reſpect. They inhabit a milder climate both by ſituation and temperature, which has ſoftened the fibres and organs, and taken off that rigour which certainly influences the mental and moral faculties of the Peſſerais, by narrowing their minds, and brutalizing their feelings. From this ſomewhat leſs conſtricted and harſh ſtate of their organization, their minds have acquired a larger and more liberal circle of ideas, improved by a greater population, and the advantages ariſing from thence by mutual aſſiſtance, improvements, inſtruction, advice,

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and education; their minds are bold and fearleſs. They are not without acuteneſs to comprehend ſound reaſon, and not without docility in adopting ſuch ideas and informations as are neceſſary and eligible in their ſituation. This has convinced them of the neceſſity and convenience of mutual attachments, and the propriety of forming larger ſocieties, in order to preſerve their liberty and independence; and as their actions are guided by violent paſſions, it is no wonder that we find among barbarous nations inſtances of fidelity and friendſhip, carried on with an enthuſiaſm, which would do honour to the moſt civilized nations, nay, which are hardly to be met with in a ſuperior degree, in this age of refinement; unleſs we look for it into poems and romances, in the diſtrict of fiction and fable. Their principles of honeſty, and public faith are noble, and romantic; but as they are jealous of their liberty and independence, the leaſt thing is conſtrued by them into offence, and they are too often ready to revenge an imaginary injury. Strangers eſpecially are looked upon as perſons to whom leſs forbearance is due than to their own friends. The wild notions of independence degenerated into licentiouſneſs, arm their minds with an intrepedity, which would be meritorious, were it uſed only on real provocation; but they work themſelves up into a frantic madneſs, run into the moſt eminent dangers, and fight with a perſeverance, which proves that death is no evil which they

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dread. In victory they are insolent, cruel, and vindictive, carrying it to the most unnatural and inhuman degree, viz. that of feasting upon the victims of their victorious prowess. They treat their women in the most oppressive manner, like the most abject drudges, or slaves, and the parents and relations frequently sold to the strangers the favours of the females, even against their will; which circumstances certainly proceed from the injurious and overbearing notions entertained in regard to their women, whom they do not think to be helpmates, but creatures intended for the satisfaction of brutish desires only, and destined to confirm them in idleness and indolence. This idea prevailed so far, that we frequently saw the little boys strike their mothers, while the fathers stood by and would not permit the mothers to correct their children. They have all a passion for ornaments, and dress; and they decorate the most common tools of husbandry or their arms, in a curious manner with volutes and scrolls, not altogether without taste. They are fond of romantic and fabulous tales, of music, songs and dances; even their fights are begun with a martial cadenced song and dance. They have some ideas of religion, and accounts of various invisible divinities, and a belief of the existence of the souls of their friends; but superstition seems not to have gained much ground among them, as far as we could observe. They have however, rites and customs peculiar to themselves, which they perform on certain

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occaſions: for inſtance, in forming friendſhips and making peace, in announcing war and burying their dead, which laſt ſometimes are ſunk, it ſeems, in the ſea. The natives of New-Zeeland, build ſome of their houſes and cottages with an elegance and neatneſs, which makes them far ſuperior to the wretched hovels of the inhabitants of Tierra del Fuego: for they are well covered on all ſides with thatch, and the inſides we found lined with reeds, ſo that they really had an appearance of neatneſs; and we ſometimes ſaw ſeveral huts ſeparated from the reſt by incloſures of thatch, which I ſuppoſe was done with a view to ſcreen them ſtill more from the raging winds, and to ſhelter their fires, which are commonly made at the entrance of their huts. Their boats are ſtronger than thoſe of Tierra del Fuego, and not without taſte in their ornaments, nor without contrivance in their whole ſtructure and ſhape, which, with the dexterous management of their paddles gives them an eaſy and ſwift motion. Their dreſs not only covers their nudities, but affords them ſhelter againſt the inclemencies of their climate, which is leſs rigorous in winter than that of Tierra del Fuego in ſummer: it is likewiſe woven with neatneſs, encompaſſed with borders, worked into various patterns of black, brown and white, ornamented on its corners with pieces of dogs-ſkin, and ſometimes covered all over with patches of white and black dogs-ſkin, diſpoſed in regular compartments. They wear over

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their garments a rug, made of the filaments of the flax-plant worked into a kind of mat, like thatch on its outside, which they call *Kegbeea*: this is so very well calculated to keep off the wind, the rain, and the spray of the sea, that it is amazing that the poor inhabitants of Tierra del Fuego, who must depend solely on the sea for their food, in a climate remarkably colder, and more boisterous than that of New-Zeeland, have not hitherto devised a better and more convenient use of their seals and guanacoes skins.

The agriculture which is so well and so carefully carried on in many parts of the Northern island, incontestibly proves the superiority of the New-Zeelanders over the inhabitants of Tierra del Fuego. So that it might be superfluous in me to take up more time in multiplying the proofs of this so evident truth.

It seems likewise equally obvious, that the more improved state of the New-Zeelanders, is owing to several causes, viz. the mildness of the climate, the greater population, and also that they are more immediately descended from such tribes as had more remains of the general principles of education. In the extremities of the Southern isle of New-Zeeland, perhaps the numbers may be only equal to those of the Pesserais, but being more happy in regard to the mildness of their climate, and the preservation of such ideas and improvements as were handed down to them, by their more happy and less degenerated ancestors; even these straggling

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straggling families are, in my opinion, to be ranked higher in the scale of human beings. ORIGIN OF SOCIETIES.

There is however one circumstance already alluded to, which seems to degrade them, viz. the odious and cruel custom of eating those, who are killed in their frequent feuds and petty wars. This has been represented by a late ingenious writer,* as originally introduced among the New-Zeelanders, by distress and hunger; but I cannot help dissenting from his opinion: for I did not find that these nations ever are so much distressed; they have prudence enough to provide in the proper season, stores of all kinds: when they catch more fish than they can eat, they carefully dry, and lay them up; their women go frequently up the hills, which are covered to an immense extent with fern, and dig up the roots, which they likewise dry, and preserve as a food to which they may have recourse, when neither fish nor any other kind of eatables are to be procured. We saw great quantities of these provisions in their huts, and frequently found them employed in preparing both fish and fern-roots, for the bad season. We were likewise told by Capt. Crozet, the friend and companion of the brave but unfortunate Capt. Marion; that when he got possession of the hippah or fortress of the New-Zeelanders, in the Bay of Islands, he

* Dr. Hawkesworth's Compilation, vol. iii. book ii. ch. 9.

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he found immenſe ſtores of dry fiſh, fern-roots, and other roots, in houſes filled ſolely with theſe proviſions. It ſeems therefore, to me, by no means probable, that a nation perfectly convinced of the neceſſity of providing againſt the ſeaſon of diſtreſs, and ſo very careful and active in collecting ſtores of eatables, ſhould nevertheleſs have been induced by neceſſity and hunger, to eat the corſes of thoſe ſlain in battle. Nay, we heard from the natives, that they never eat thoſe, who die a natural death, but either ſink them in the ſea, or bury them under ground: were neceſſity the true cauſe of this cuſtom, why ſhould they not feaſt upon the dead who formed the ſame community with them? But it will be objected, that hunger may be allowed ſo far to ſtifle all ſentimental feelings of humanity, that they might ſuffer themſelves to ſatisfy its cravings upon the corſe of a ſlain foe, but that it will never carry them ſo far as to feed upon the fleſh of thoſe who lived in the ſame ſociety with them. How ſpecious ſoever this objection may be, it never can perſuade me that hunger will make theſe nice diſtinctions, in a people, who have not thoſe tender, humane feelings and emotions, of which we are capable, in ſo highly civilized a ſtate, with a refined education, and principles infinitely ſuperior to theirs. *

But

* If the account given in the life of Pierre Viaud is to be credited; for the credibility of which, there are the greateſt reaſons, founded upon the joint teſtimonies of ſeveral reſpectable perſons,

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But I had reaſon to believe, that all the nations of the South Seas were formerly cannibals, even in the moſt happy and fertile climates, where they ſtill live upon the almoſt ſpontaneous fruits, though their population be extremely great. The natives of Tanna gave us more than once to underſtand, that if we penetrated far into the country againſt their will, and without their permiſſion, they would kill us, cut our bodies up, and eat them: when we purpoſely affected to miſunderſtand this laſt part of their ſtory, and interpreted it, as if they were going to give us ſomething good to eat, they convinced us by ſigns which could not be miſinterpreted, that they would tear with their teeth the fleſh from our arms and legs.

In Mallicollo, we had likewiſe ſome intimation that they were cannibals. The Taheiteans frequently enumerated to us iſles inhabited by men-eaters: for inſtance, they ſaid, that beyond Tabuamanoo is a high iſland called Manua, whoſe inhabitants "have but very few canoes, are ferocious, have wild and furious eyes, and eat men:" nay, we were at laſt told, that they themſelves had formerly been *Tabéäi*, i. e. men-eaters. As the inhabitants

perſons, and of ſuch people who had no inducement to compliment the author with their teſtimonies; it may ſerve to prove ſtill more the enormities, to which the rage of hunger may drive ſome wretches; and it likewiſe ſhews, how eaſily the more refined feelings of humanity are overcome, by the horrors of unconquerable want.

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inhabitants of New-Zeeland certainly belong to the ſame race of people with the Taheiteans, it is evident that this cuſtom has been common to the whole tribe. What is ſtill more remarkable, it ſeems from thence to follow, that the want of a ſufficiency of food in this iſle, which is leſs fertile than the tropical countries, cannot have occaſioned their cannibaliſm, ſince even the inhabitants of the happy and fertile tropical iſles were men-eaters, without being forced to it by diſtreſs and hunger, and we muſt therefore certainly be convinced that there muſt be ſome other cauſe, which originally introduced this unnatural cuſtom.

If we examine the whole œconomy of their ſocieties, we find that their education is the chief cauſe of all theſe enormities. The men train up the boys in a kind of liberty, which at laſt degenerates into licentiouſneſs: they ſuffer not the mothers to ſtrike their petulant, unruly, and wicked ſons, for fear of breaking that ſpirit of independency, which they ſeem to value above all things, and as the moſt neceſſary qualification for their ſocieties; this naturally brings on an iraſcibility, which, in the men, cannot brook any controul, action or word, that can be conſtrued according to their manners and principles, into an affront, or injury; inflamed by paſſion, they are impatient to wreak their vengeance: wild fancy paints the injury ſo atrocious, that it muſt be waſhed in blood; they know not where to ſtop, and being more and more incenſed by

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the power of imagination, they go to battle with a loud and barbarous ſong; each feature is diſtorted, each limb is ſet in a cadenced motion; they brandiſh their deſtructive weapons, and ſtamp upon the ground with their feet, while the whole band join in an awful, tremendous groan; the ſong begins a new, and at laſt the whole troop is loſt in frenzy and rage; they fall to, and every one fights as if animated by furies; and deſtruction and carnage await the routed party: whoſoever falls, is murdered without mercy, and the corſes of the ſlain immediately ſerve to glut the inhuman appetites of the conquerors. When the bounds of humanity are once paſſed, and the reverence due to the bright image of divinity, is conquered by frenzy, the practice ſoon becomes habitual, eſpecially as it is reckoned among the honours due to the conqueror, to feaſt upon the wretched victims of ſavage victory; add to this, that a nation which has no other animal food, than a few ſtupid dogs and fiſh, will ſoon reconcile themſelves to human fleſh, which, according to ſeveral known inſtances, * is reputed to be one of the moſt palatable diſhes. ORIGIN OF SOCIETIES.

* In the province of Matto-groſſo, in Brazil, a woman told his Excellency Chevalier Pinto, who was then Governor, that human fleſh was extremely palatable, eſpecially if taken from a young perſon. And during the laſt dearth in Germany, a ſhepherd killed firſt a young perſon, to ſatisfy the cravings of hunger with his fleſh, and afterwards ſeveral more, in order to pleaſe his luxurious palate.

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To us, indeed, who are uſed to live in better regulated ſocieties, where for many years backwards, anthropophagy has been in diſuſe, it is always a horrid idea, that men ſhould eat men. But I cannot help obſerving, that this barbariſm is one of the ſteps, by which debaſed humanity, is gradually prepared for a better ſtate of happineſs; in the ſavage ſtate, where man is juſt one remove from animality, wherein he has no other impulſe for action, than want, he ſoon ſinks into ſtupid indolence, which more and more debaſes all his powers and faculties: but ſcarce have the paſſions begun to act as the main ſprings of human actions, when man is carried from the firſt excentric action to a ſecond, from one enormity to another; and from this or that ſhocking ſcene of cruelty, barbariſm and inhumanity to others of a higher degree: theſe would grow to an outrageous height, were it not for certain circumſtances, which at laſt naturally put a total ſtop to thoſe inhuman practices. If therefore barbarians, who ſtill preſerve the ſhocking cuſtom of eating men, meet with other tribes that have the ſame barbarous cuſtom, and are ſtrong or active enough, either by chance or bravery, to check their neighbours in their inhuman wrongs, they will ſoon be ſenſible, that their own numbers muſt decreaſe by theſe loſſes; they will therefore grow more cautious in provoking their anger or vengeance by new outrages, and will gradu-

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ally become ſober enough to be convinced, that it is more reaſonable to lay aſide the cuſtom of eating men, and that a living man is more uſeful than one that is dead or roaſted; they in conſequence change their unnatural cruelty into a more humane behaviour; though it be not quite free from injuſtice and intereſt, it is however, leſs deſtructive to mankind, and prepares the way to a more humane and benevolent ſcene. Or let us on the other hand ſuppoſe, theſe barbarians meet with unmerited ſucceſs, and always rout their neighbours, as often as they take the field; theſe humiliated foes, in order to avoid their utter ruin and deſtruction, will at laſt offer terms of accommodation; and though their condition ſhould become as abject as poſſible, they will prefer it to a greater and unavoidable evil, involving the whole ruin of their tribe; the conquerors will ſoon diſcover, that by preſerving the lives of their ſubjected foes, they may reap conſiderable advantages from their labour and united force, which will gradually improve their condition, and render them more and more happy. ORIGIN OF SOCIETIES.

This idea might be deemed imaginary; but upon examination, it will appear to be eſtabliſhed in truth. In the Northern Iſle of New-Zeeland, in a diſtrict of more than 90 miles, Captain Cook, found in his former voyage, the name of a great chief, called TEIRATOO, to be generally acknowledged; and it ſhould ſeem from thence, that the ſmall tribes under his dominion, were ei-

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ther ſubdued by him and his adherents; or that they found it their intereſt, upon their own account, to acknowledge his authority, to become his ſubjects upon certain conditions, and thus to form one large political body, for greater ſecurity and defence; the better regulations, a ſecurity both of perſon and property, and a more impartial adminiſtration of juſtice, mentioned in the ſame account, prove beyond diſpute, that from the violent ſtate of cannibaliſm, the New-Zeelanders will ſoon arrive in their moſt populous diſtricts, to a more ſettled and more happy ſtate. For though the ſubjects for TEIRATOO ſtill eat men, this cuſtom is rather kept up on account of the vicinity of ſuch tribes as ſtill retain the ſame cuſtom, otherwiſe their more improved ſituation would hardly admit of it.

"*Denique cætera animantia in ſuo genere probe degunt: con-*
"*gregari videmus & ſtare contra diſſimilia: Leonum feritas*
"*inter ſe non dimicat: ſerpentum morſus non petit ſerpentes:*
"*ne maris quidem belluæ ac piſces, niſi in diverſa genera,*
"*ſæviunt: at hercule! homini plurima ex homine ſunt mala.*"
PLIN. HIST. NAT. lib. vii. Procemii fine.

It is either the fault of ſome tribes, who are wanton, quarrelſome, and overbearing, when they are driven by more powerful nations, to ſuch a deſperate ſituation, that they become degenerate, and their offſpring ſinks to the loweſt condition that can be intailed on mankind; or it is rather owing to cruel chance or accident, that they

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are brought into a forlorn ſtate, wherein their progeny lingers for ſome time: in both caſes Providence has wiſely made a proviſion for preventing the perpetuity of miſery and wretchedneſs in a nation, by infuſing originally, in the human ſoul, ſuch faculties and powers, that when unfolded, or ſet in motion by unforeſeen accidents, ſhall at laſt invigorate the minds of men, and ſupply them with the neceſſary means and ſtrength for emerging from their debaſed condition, and enable them to reſume gradually a higher rank in the ſcale of rational beings. The poor inhabitants of Tierra del Fuego, act only by inſtinct, by neceſſity and want, and in conſequence of the accidental occurrences, which chance, or the natural changes of the elements and ſeaſons throw in their way; but a more frequent intercourſe with Europeans, or ſome other unforeſeen accident, for inſtance, the fortuitous invention of iron, or ſome other uſeful metal; a diſcovery of the utility of ſome vegetable or tree in their climates; a new deviſe for catching fiſh, birds, and quadrupeds, in a more eaſy and expeditious manner than they have hitherto been accuſtomed to, muſt doubtleſs, ſooner or later, bring on a revolution in their condition; new manners, new cuſtoms, a change of diet, of dreſs, weapons and utenſils, muſt gradually produce a total change of their way of thinking and acting, introduce an alteration in their temper, facilitate the better regulation and ſecurity of their ſocieties, ORIGIN OF SOCIETIES.

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ties, and deliver them from that ſtupidity, torpor, and indolence with which they are now oppreſſed: for when once the mind is enlightened with new ideas, and new combinations, and a field opened to fancy and imagination in the recital of their actions, in their ſongs, dances, and various other repreſentations; the paſſions, the great ſource of action in human life, will kindle in their breaſts that Promethean fire, which will infuſe ſtrength and vigor into all the tranſactions of the community. Thus ought we to admire and adore that Providence, which, by the moſt ſimple means, always effects its intended purpoſe, and out of paternal care and tenderneſs, leaves the moſt degenerated race of men, not altogether deſtitute of faculties, powers, and means, by which they may emerge from their forlorn condition: nay, the very paſſions, which by their abuſe and lawleſs condition, but too often become the cauſes of dangerous evils in human ſociety, are employed by the wiſe Governor of the world, as ſubordinate cauſes, to forward the happineſs of mankind, and to bring them gradually to a more mild, virtuous ſtate, and to happineſs of every kind. But at the ſame time that my moſt inward thoughts are proſtrate in adoration before the great Maker and Father of the ſouls of all fleſh; my heart is filled with the warmeſt wiſhes that it may pleaſe the alwiſe Providence ſoon to raiſe this brave and generous race of my fellow creatures from their unnatural ſtate, to a condition, where humanity

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manity may characteriſe each action; that fellow-feeling, kindneſs, and univerſal charity may victoriouſly ſpread throughout all theſe barbarous nations, and reſtore that reverential awe due to man, the nobleſt work of God on Earth. ORIGIN OF SOCIETIES.

— — — — Deus ille fuit — — —
Qui princeps vitæ rationem invenit eam, quæ
Nunc appellatur ſapientia: quippe per artem
Fluctibus e tantis vitam, tantiſque tenebris,
In tam tranquillo, & tam clarâ luce locavit.

LUCRETIUS, L. V.

CHAP.

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CHAP. V.

General Principles of National Happineſs.—Increaſe of Population.—Cauſes of Union.—Cultivation.—Property.—Society.—Government.

TUM GENUS HUMANUM PRIMUM MOLLESCERE COEPIT. *Lucretius*, l. v.

PRINCIPLES OF UNION.

THE odious humiliating ſcenes of barbariſm are ſo irkſome and ſo tedious to the mind of the obſerver, that it gives pleaſure to know that they are paſt. It is therefore not a common degree of ſelfdenial, fortitude, and heroiſm, required in a man, to reſign his whole life to the education and improvement of barbarians; to have the ſcenes of cruelty and of debaſement day after day before his eyes, to ſee his benevolent intentions oppoſed and defeated, and if any improvements take place, to obſerve their ſlow and tardy growth. On the other hand, it is next to impoſſible, to deſcribe the pleaſing ſatisfaction, and the agreeable feelings ariſing at the ſight of happy ſcenes, in a nation abounding with benevolence, and ſhewing the firſt bloſſoms of ſocial feelings. The paſſing through the gloomy ſcenes of the firſt, is a flight through utter and through middle darkneſs.

And

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And now that I am returning to the bright regions of tropical countries, I feel the powerful influence of the great fountain of ætherial light, that gladdens every heart. PRINCIPLES OF UNION.

Thee I reviſit ſafe,
And feel thy ſov'reign vital lamp.

MILTON.

In order to treat the ſubject I have undertaken, with that order, clearneſs, and conviction, which its extenſive utility, and intereſting doctrines require, let us in a ſhort excurſion on the general principles of ſocial life, and on the advantages and happineſs, which reaſonably may be expected in civilized ſocieties, fix ſome ideas that may lead to the inveſtigation of this great and intereſting doctrine.

Man, ſuch as he every where is, has a ſtrong deſire of being as happy as his circumſtances will admit. The natural and moſt preſſing wants, ſoon convince him that he cannot enjoy by himſelf even a moderate ſhare of happineſs; and that uniting with other human beings, is the moſt effectual means, not only of procuring the greateſt degree of happineſs poſſible in his ſituation; but alſo of inſuring to him with certainty, an undiſturbed enjoyment of it. He will ſoon be ſenſible that his own happineſs procured by the aſſiſtance of the united efforts of other human beings, depends likewiſe upon their happineſs; for no one who is

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doomed to be under continual pain, or overwhelmed with misery, will sincerely endeavour to contribute to the satisfaction of another, if he finds himself more wretched upon every effort to increase the happiness of his fellow creature. It must therefore be the interest of each individual who wishes to be happy, to promote the prosperity of the whole community to which he belongs; and from whom he expects acts of reciprocal kindness, that may tend to improve his own happiness. The happiness of every human being living in a society, depends upon the following principles.

First, Man has an organic body, requiring food, habitation, and dress, as means conducive to its support; and many other things necessary, in order to acquire these articles without great labour and peril, or in other words, to make life more agreeable and easy; these we would call the *principles of* PHYSICAL HAPPINESS.

Secondly, Man is likewise a rational, thinking, and freely acting being; his happiness therefore requires that he be able to procure the means of improving his intellectual faculties by instruction, and to preserve the rights and privileges of a free agency, which however, ought to be directed by charity and benevolence towards the promotion of his own happiness, and that of his fellow creatures. In a word, he ought to be enabled to live in a manner becoming the dignity of a rational and free being; and from thence we may collect the *principles of* MORAL HAPPINESS.

Lastly,

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Laſtly, As he is become together with others, a member of a community, with a view to the promotion of mutual happineſs; he expects to derive from this union or ſociety the means of enjoying with certainty, in a perfect and undiſturbed manner his phyſical and moral happineſs. Herein conſiſt *the principles of* CIVIL OR SOCIAL FELICITY. PRINCIPLES OF UNION.

From hence it becomes evident, that whenever men are found to live in ſocieties for the promotion of mutual happineſs, they ought to enjoy *phyſical*, *moral* and *ſocial felicity* in the higheſt degree poſſible, in their ſituation and circumſtances.

But beſides the abovementioned diviſion of happineſs we muſt allow, that it naturally muſt have many degrees, depending on the following circumſtances.

Firſt, The more *various* and *multiplied* the objects of *phyſical*, *moral*, and *ſocial* enjoyment are, which a man or a whole ſociety really can make their own, the greater muſt their happineſs be: and on the other hand, the fewer and the leſs varied the enjoyments, and objects of enjoyment are, the more circumſcribed and ſmall is their happineſs.

Secondly, The *longer the duration* of enjoyments of a man or ſociety of men is, the happier they will find themſelves: and the more fleeting and tranſitory their enjoyments are, in the ſame degree, muſt they experience unhappineſs.

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Thirdly, The more *extenſive* and *general the influence* of all the enjoyment of a man or a ſociety, is in regard to their phyſical, moral and ſocial felicity, the more their happineſs muſt be increaſed; and on the contrary, if their enjoyments have no effect or influence upon their own happineſs, or that of others, then indeed it hardly deſerves the name of happineſs, or it is at leaſt very inconſiderable.

By theſe few principles are we enabled to judge, with a tolerable degree of preciſion, of the happineſs and civilization of the nations we met with in the courſe of our voyage; eſpecially if we haye a retroſpect to the cauſes which promote felicity, and which hinder the ſame, or at leaſt check its progreſs and more rapid increaſe.

For when men live in a genial climate, and enjoy the advantages of a happy organization, NATURE ſeems to do every thing vigorouſly, in promoting their happineſs. Thus we ſee the early improvements, grandeur and happineſs of the Aſſyrian and Egyptian empires; their climate is one of the mildeſt and moſt temperate; its inhabitants, even in their preſent degenerated, barbarous ſtate, are endowed with a lively temper, and quick parts; nor are they deſtitute of good-nature and benevolence: no wonder, therefore, that ancient hiſtory is ſo copious on the ſtate of their population, wealth, opulence, and happineſs, which cannot be controverted,

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as the vaſt monuments and ſtupendous buildings of theſe nations are ſtill ſubſiſting, and witneſs the truth of their hiſtorians. PRINCIPLES OF SOCIETIES.

In climates nearly approaching the mild temperature of the former, the inhabitants are bleſſed with an organization proportioned to the ſoftneſs of their climate, though probably deſcended from tribes that came from more rigid climates, and had been leſs happy in the preſervation of the original ſyſtems of education; among theſe, national felicity could not be brought about with ſucceſs, without the aſſiſtance of ART. Cecrops, Triptolemus, Theſeus, Solon, Piſiſtratus, Miltiades and Ariſtides, were the men, who, by art, aſſiſted nature in Attica, and it required the efforts of the beſt and wiſeſt men, during a ſpace of 1130 years, before the Athenians could attain that pitch of happineſs under Pericles, which made their empire the moſt reſpectable and happy in the cotemporary civilized part of the world.

In climates ſtill more unfavourable and rigid, not only the aſſiſtance of art, but that of CREATIVE phyſical POWER, as well as that of CREATIVE genius, is required to inſure the happineſs of the inhabitants, whoſe fibres had contracted a congenial roughneſs and rigidity, and who are continually ſubject to numberleſs checks and hindrances, to every improvement leading to national felicity. Such was the power and genius of Peter the Great; who, in half a century, raiſed his nation from indolence, barbariſm, and ſtupidity,

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ſtupidity, to that degree of happineſs and grandeur, which it now enjoys under the mild and benevolent legiſlation of CATHARINE THE GREAT.

Such likewiſe are the various gradations of the happineſs of the inhabitants of the South-Sea Iſlands; ſome have attained, in the courſe of nature, a degree of felicity, which is proportioned to their ſituation and condition; others are behind-hand in improvements and happineſs, and can never attain it, unleſs nature be aſſiſted by human art; in others, again, a whole new creation is required, to procure and to inſure them that happineſs which would ſet them upon a level with the firſt mentioned happy tribes. There are beſides, ſo many concurring circumſtances, that either promote or retard national felicity, that it is impoſſible, either to enumerate them all, or to deſcribe the various hues of happineſs ariſing from their different combinations. This, however, may be added to the former obſervations, that too great irritability, or too great rigidity of the human organization, equally oppoſe the progreſs of improvements and ſocial felicity; the one cauſes a reſtleſs, paſſionate temper, in a fervent climate; the other creates ſtupidity, dullneſs and indolence, in the rigid and cold regions, found at the two polar extremities of our globe: and how difficult it is to conquer either the one or the other, may be eaſily proved from the hitherto fruitleſs attempts in civilizing the negroes of our plantations, or

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the Greenlanders and Laplanders of the North. I will not, however, deny, that perhaps the moſt proper means have not hitherto been employed, in bringing this difficult undertaking, even ſo far, that a rational probability of a very diſtant ſucceſs, might be expected. The above-mentioned articles form the point of view, under which we now would wiſh every body to conſider the more civilized ſtate of the tropical nations in the South-Seas. PRINCIPLES OF SOCIETIES.

We found the iſles in the South-Sea very populous; and from the accounts of former navigators, they were ſo, more than 180 years ago, and in the very condition, in regard to happineſs, in which we ourſelves obſerved them; ſo that we may be ſure, that their civil or ſocial eſtabliſhment is of a long ſtanding.

It is hardly credible, that the inhabitants were very numerous when they firſt occupied theſe iſles; but the eaſe and facility with which they can ſupport their lives, and ſatisfy the natural and moſt preſſing wants, the early puberty in ſo mild and ſo happy a climate, the few diſeaſes which are obſerved in nations uſed to a ſimple and ſalubrious food, are certainly reaſons for ſuppoſing that they ſoon increaſed, and gradually filled the iſlands which they had occupied.---The firſt inhabitants had not the leaſt difficulty in procuring their ſubſiſtence, as the ſea and the fruits of various trees, ſufficiently afforded them the neceſſary food: but in proportion as their numbers increaſed, their ſubſiſtence of courſe muſt become more.

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more precarious in an iſle, which only yields, ſpontaneouſly, the neceſſaries for a certain determined number of inhabitants; they therefore ſoon found themſelves under the neceſſity of deviſing ſome method of ſupplying the neceſſary food, principally by cultivating thoſe plants, upon the wild produce of which they formerly lived. They began regularly to plant coco-nut-palms, bananas, South-Sea apples, yamboes, and bread-fruit trees, together with the yam, the ſweet potatoe, the two kinds of eddoes, the tacca and the ſugar-cane. Theſe plantations being the work of the induſtry and foreſight of ſome individuals, gave them a right to reap their productions; and as their example was ſoon followed by people equally ſolicitous for their preſervation, this method of raiſing a ſufficiency of food by induſtry and labour, became more univerſal; and when they found that the right of reaping the fruit of their own induſtry, was ſometimes invaded by the indolent, the powerful, and the deſperate, they began to form aſſociations for the defence of their plantations, on which their very exiſtence depended; they conſequently ſtipulated, firſt among themſelves, not to deſtroy one anothers plantations, to defend them jointly againſt the violence of others, and to give one another mutual aſſiſtance; in this manner the plantations were increaſed, extended, and in a manner ſurrounded by thoſe of others; then every one began to look upon the land occupied by his trees or roots, as having a more

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more immediate connexion with his perſon, or with the family or ſociety to which he belonged; and hence aroſe the firſt ideas of property. Thus were gradually introduced certain regulations, agreed upon by mutual conſent, and thus were ſoon formed thoſe cuſtomary laws, which more or leſs take place among the nations that have property. The experience of ſeveral years ſoon taught them to diſtinguiſh the ſoil and ſeaſon, moſt proper for each of the plants and roots; the moſt eaſy and uſeful method of preparing the ſoil for the reception and propagation of them, together with the means of averting danger from thoſe vegetables, which are of ſo great conſequence to them: the preſervation of theſe eatables, by way of ſtore, again required new efforts of genius and ſeveral experiments; and laſtly, the preparation of them into various diſhes, in order to avoid ſameneſs and uniformity, ſtill enriched their knowledge, and increaſed the ſtock of their uſeful ideas, and practical operations. Iſles are, on account of their circumſcribed ſize, more apt to promote and to accelerate civilization, than large continents; for in theſe, the inhabitants having too much room to roam over the country, and to diſperſe, in caſe of a diſguſt, or offence, they are prevented from entering into aſſociations, and from making uſeful regulations relative to mutual aſſiſtance and mutual defence; and as they meet either with a ſufficiency of ſpontaneous fruits, on a large tract of unoccu-

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pied land, or have opportunities to live by the chace, or by fiſhing, they conſtantly refuſe to provide for their ſubſiſtence by a laborious, toilſome cultivation. However, in ſmall iſlands, where the numbers of people are too inconſiderable for affording mutual ſecurity and aſſiſtance, or for forming a powerful ſociety, and where there is no chance either for cultivation varied according to the difference of ſoil and expoſures, or for extenſive plantations, there likewiſe, it is in vain to expect ſo well regulated ſocieties, as in iſles of a tolerable ſize, and of various expoſures and ſoils. It is therefore in my opinion evident, that the largeſt of the tropical iſles, when all the other circumſtances concur, muſt be the happieſt and moſt civilized, as none of them is of too great extent.

Otaheitee and the neighbouring Society iſles, are in this point nearer to happineſs than any other nations we met with. They have a greater variety of food and in greater abundance, than any of the other nations. Their dreſs is likewiſe more varied, a kind of refinement this, which moſt of the other nations either entirely want, or at leaſt in a very imperfect manner poſſeſs. Their habitations are clean and roomy, and thoſe of the better ſort of people are even neat and elegant, as far as theſe advantages may be carried in its firſt rude beginning.

They have ideas of many things, which never occurred to other nations of the South Sea, their intellectual faculties, enlarged by

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inſtruction and exerciſe, are capable of comprehending, retaining, reproducing, and combining ideas, and though extremely quick of perception, and lively in their tempers, they are however, equally jealous of their liberty and free agency; and what is ſtill more happy, the ſimple but rational education, the happieſt organization and the mildneſs of their climate concur in forming their minds for benevolence, and in filling their hearts with ſoft and tender feelings, and a charitable diſpoſition. Any foreigner endeavouring to ingratiate himſelf with theſe generous friendly people, will ſoon ſucceed, though they can reap no benefit or advantage from a connection with him; and if he ſhould happen to be ſick, indiſpoſed, diſtreſſed, or only tired, or wanting ſome refreſhment; they will all vie one with another to aſſiſt, to nurſe and to refreſh him. Their hearts are capable of the warmeſt attachment, of the moſt generous friendſhip, and of the moſt tender connexions, of which, in our mixed and degenerating ſocieties, we have very few inſtances; perhaps none at all, where ſuch a diſintereſted, generous love, or ſuch an enthuſiaſm of paſſion forms the baſis of the tender connexion. Having myſelf felt all the tender emotions of a parent, during the ſoft moments of filial endearment, I flatter myſelf that I was in this caſe no incompetent judge; however I muſt confeſs that ſeveral of their children, and even of their more grown youths, had ſuch winning and captivating means of ingra-

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tiating themſelves with me; they ſhewed ſuch confidence, openneſs, and grateful returns to the little trifling preſents I uſed to make them; they became ſo attached to me, and were ſo ſtudious of rendering me ſome ſmall ſervices, and of warning me againſt the thieviſh practices of ſome of their countrymen, that my heart could not reſiſt their inſinuating and innocently kind behaviour. I felt for many of them emotions, which were not ſo far diſtant from paternal affection and complacency, as might be expected, when we recollect the great difference of our manners and our way of thinking. But I found likewiſe on this occaſion, what a great and venerable bleſſing benevolence is; when it is no longer the faſhionable cant, borrowed from a favourite poet, or a moral romance, and dwelling only on mens lips; but when this beſt gift of heaven ſits enthroned in the heart, fills the ſoul with gracious ſenſations, and prompts all our faculties to expreſſions of good-nature and kindneſs: then only does it connect all mankind as it were into one family; youths of diſtant nations become brethren, and the older people of one nation, find children in the offſpring of the other. All thoſe diſtinctions which ambition, wealth, and luxury, have introduced, are levelled, and the inhabitant of the polar region, finds a warm and generous friend in the torrid zone or in the oppoſite hemiſphere. Still my heart was filled with tender affliction, and my eyes overflowed with tears of genuine

ſorrow

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sorrow, when I perceived that our own civilized countries, notwithstanding the numberless improvements they had received from the establishment of excellent laws, and the cultivation of arts and sciences; notwithstanding the frequent occasions of still greater improvement, and the glorious encouragement to virtue and morality, were far outdone in real goodness and benevolence by a set of innocent people, so much our inferiors in many other respects; and I could not help repeatedly wishing, that our civilized Europeans might add to their many advantages, that innocence of heart and genuine simplicity of manners, that spirit of benevolence, and real goodness, which these my new acquired friends so eminently possessed. PRINCIPLES OF SOCIETIES.

The Taheiteans as individuals, not only have the several good qualities above mentioned, of a domestic kind, but they are likewise sensible of the great advantages of a social or civil union: and as far as our imperfect knowledge of their language; our short stay amongst them, and the desultory instruction of *Mahcine* and *O-Mai* would permit, I have reasons to think, that the beginning of their civil society is founded on paternal authority, and is of the patriarchal kind. The husband and the wife of his bosom, whom love unites by the silken ties of matrimony, form the first society. This union is, in these happy regions, first founded on the call of nature, in mutual assistance, and the sweet hopes of seeing themselves

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ſelves reproduced in a numerous offspring. In more degenerated nations, matrimonial union takes place from brutal appetite, is grounded upon the ſatisfaction of ſenſuality, the expectation of aſſiſtance from perſons, whom oppreſſion and cuſtom has condemned to become drudges, and laſtly the idea of gaining more ſtrength and power from a numerous family of children. On the contrary, the mildneſs of the climate, the happineſs of organization, and the kind and benevolent temper of this people, together with their more enlightened intellects, contribute very much to refine and to ennoble that ſoft paſſion which is the firſt beginning of this congenial harmony; and hence the brutiſh inſtincts, which were wants of the ſame low rank with hunger and thirſt, are raiſed to a laſting, virtuous paſſion. This refinement of mutual love and matrimonial complacency, produces thoſe tender regards with which this happy paſſion inſpires its votaries for the beloved object; and it creates that mutual happineſs, which is the reſult of all the more refined manners, and of their more poliſhed behaviour towards one another. The offspring of ſuch a happy couple early imbibe by the example of their parents, that kindneſs and benevolence, and thoſe refined ſentiments of love and happineſs which contribute ſo much to confirm the felicity of their parents, and wiſh to reduce them to practice, as ſoon as they feel the call of nature and find a partner whoſe ſentiments are in uniſon with their own;

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own; so that these simple, but more exalted ideas of matrimonial union, are thus propagated and perpetuated in the progeny of a virtuous and tender couple. But before they attain that age of discretion and maturity, the fond parents take peculiar care of their education: they frequently check the wild flights of their unruly passions, and instill order, moderate industry, and the principles of benevolence and gratitude into their tender minds. I have seen mothers punishing obstinacy and disobedience, and though extremely fond of their children, they nevertheless are sensible enough thus far to do violence to their own feelings, that their children may not acquire a habit of ingratitude, obstinacy, and immorality; I have likewise heard them expostulating with their unruly little ones, and expressing their displeasure at their conduct; all which proves that they have ideas of moral rectitude, of order and filial subordination, and of the necessity of instilling these principles early into the minds of their children. Nor is this careful education without the good effects, which ought to be the consequence of it: for we saw many a family, where every individual belonging to it, gave strong marks of an attachment to the rest of the family, and evident proofs of those ties of benevolence which united them all. The younger part of them shewed reverence and respect to the older individuals, and at the least and most distant danger were alarmed and anxious for the welfare and

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and ſafety of their parents. The injunctions of the parents were executed, with a readineſs and truly exemplary affection. The father ſeemed to be the ſoul which animated the whole body of the family by his ſuperior wiſdom, benevolence and experience; in a word, they all aſſiſt one another, and contribute their ſhare of offices and labour, towards the ſupport, ſecurity and happineſs of the whole family.

If ſeveral families find the wiſdom, experience, valour, and benevolence of one head of a family to be ſuperior to thoſe of the reſt, they all look upon him as their common father, they ſubmit to his advice as to injunctions, and his councils become as ſacred and inviolable as laws. This voluntary union into one great family, diffuſes through them all that attachment, and benevolence, that ſpirit of order and regularity, which are the true promoters of morality, and univerſal happineſs. If the ſon of this chief has ſkill, addreſs and benevolence enough to tread in his fathers foot-ſteps, he ſucceeds his father in authority, and thus a ſociety gradually accuſtom themſelves to look upon their chiefs with reverence, and accept the poſterity of an equitable, benevolent leader, for their hereditary chief. As all the regulations for the weal of the ſociety are chiefly iſſued by this ruler, as he is foremoſt in defending their liberty and property againſt any daring invader of their common right, as he decides between man and man in

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private disagreements, and punishes the wanton disturbers of public peace, all the authority of the whole community, centers in him; and as many advantages accrue to him on different occasions, and opportunities offer of making acquisitions of property, either by the voluntary, general contributions, of all the inferior members of the community, or by the administration and distribution of the public property and wealth, it may be expected that he will become possessed of a greater share of wealth than any of the rest, which must gradually give him more influence and greater power: his family no doubt participate of this power, influence and wealth, and consequently form a class of people distinct from the commons. PRINCIPLES OF UNION.

If the society is attacked or injured by another society, and all unite to avert the injuries, to repel violence, and to retaliate upon the invaders and disturbers of the peace, the same wrongs which they intended to inflict; it is natural to suppose, that upon a very great provocation, and a consequently greater exertion of power, they may become victorious, which must, of course, make the condition of the vanquished tribe, inferior to that of the lowest of the victorious community, and create a new rank of people in their society. These seem to be the consequences of matrimonial union, of paternal authority, and the more general authority of a chief of a society, and the origin of ranks in O-Taheitee, the Society, and Friendly Isles.

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The great chief is called *Aree-rahai*: the reſt of his family are all Arees, and have ſome landed property, and among them we obſerved men of ſtill greater rank and authority, who were chiefs of the differents diſtricts, or Whennuas in the iſle, and were called after the diſtrict, which was entruſted to their care and government; thus Hapaí O-Tu's father was *Aree n'O-parre*, chief of Oparre; O-Retti was chief of *O-Hiddea*; O-Amo was chief of *Papara*; T-Owha and Potatou were joint-chiefs of *Atahooroo*; Toppere had the direction of *Matavai* and Toomataroa that of *Tittahaw*. Beſides theſe, is a claſs of people called *Manahounes*, who have landed property; and laſtly, thoſe belonging to the loweſt rank of people are called *Toutous*.

As ſeveral words of the Malay language, are found in the O-Taheitee tongue, and its various dialects, they may be conſidered as proofs of the origin of theſe iſlanders. I am not willing to affirm that they are abſolutely the immediate offspring of the Malays; but it appeared to me very obvious from many concurring circumſtances, that they were deſcended from ſome tribes, that are related to the Malays. The Tagalas and Pampangas are no doubt the offſpring of the Malays; for Dr. Gemelli Carreri affirms, that they came from the continent of Malacca, and they themſelves allow, that they came from Borneo.* The inhabitants of the Ladrones ſpeak

* Voyage autour du monde par Gemelli Carreri, tom. v. p. 64.

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ſpeak a language related to that of the Tagalas.* The vicinity of ſome of the New-Caroline iſlands, and the ſimilarity of their cuſtoms and manners, make it highly probable, that the ſame nation is ſpread all over that great cluſter of iſlands, extending for more than 30 degrees of longitude; and from thence to Byrons Iſland, and ſome of thoſe iſlands where the Taheitean dialect is ſpoken, is not ſo great a diſtance. By this line I preſume to trace the firſt migration of the tribes, who firſt peopled the Eaſtern South-Sea iſles. If we add to this the great ſimilarity between the manners and cuſtoms of the inhabitants of the Caroline iſlands, and thoſe of the Friendly iſles, this line of migration muſt appear to be ſomething more than mere conjecture. ORIGIN OF SOCIETIES

The moſt authentic accounts of a modern philoſophic traveller † inform us, that a kind of feudal ſyſtem is received by the Malays, which, as far as we know, admits of ſeveral ranks of men, very much in the ſame manner as we obſerved in the Society iſles; and they poſſeſs likewiſe their lands by a kind of feudal tenure. The great chief or king, grants to the inferior chiefs, a diſtrict or province: under them, the reſt of the Arees or chiefs have portions of land allotted to them; and the Manahounes, though not of the

* See Hiſtoire des Iſles Mariannes par le P. Gobien, Paris, 1700, 12mo. & the Abſtract of the ſecond book of Gobien, in des Broſſes Hiſtoire des Navigations, aux Terres Auſtrales, vol. ii. p. 495.

† Mr. le Poivre.

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royal family, have likewiſe grants of land. The chiefs of the provinces, as well as the inferior Arees, have their demeſnes cultivated by Toutous, who are obliged to raiſe fruits and roots, for the neceſſary food of their Aree; to fiſh, to build houſes and canoes, to make cloth, to work their boats in war and peace, and to do every thing they bid them: and for this ſervice they have the overplus of fruit and fiſh; which latter, the chief commonly diſtributes among all his vaſſals, very impartially, if they catch a conſiderable quantity at once. The Manahoune, his brethren, and offspring, cultivate the ground, which is granted to them; and I cannot ſay, that I ever obſerved Toutous attached to them. In war time, the great chief, with the advice of his relations, and of the chiefs of the provinces, who ſeem to have great influence in public affairs, orders an armament to be prepared; and as the ſhores only are inhabited, the attack commonly is made by ſea: for that reaſon they have numbers of war-canoes, built and laid up under large ſheds, which are immediately fitted out upon any ſuch requiſition, from the Lord Paramount; each inferior chief and Manahoune is again either maſter of ſuch a war-canoe, or he does ſervice on board of one of them, as a warrior, and the Toutous are employed in paddling and working them. The chiefs of provinces regulate every thing in their diſtricts, and adminiſter juſtice, their authority being as great as that of the king. On extraordinary

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nary occaſions, however, the king interpoſes his authority: thus I heard Oree, king of Huaheine, order his *Hoa* * to go into a diſtrict of another chief, and bid him tell ſuch were the words of the Arec-rahai; to apprehend the thieves, and ſeize the ſtolen goods, which he enumerated; the goods were in part reſtored the ſame day, and the next day he was ready to puniſh the thieves in our preſence, had we not already been too far out at ſea, and had we at firſt well underſtood his meaning. At O-Taheitee we ſaw the review of the naval armaments of two diſtricts, which were deſtined to ſubdue a great revolted vaſſal, or feudal lord, on the iſle of *Imeo*, in the diſtrict of *Morea*; and we were told, that every chief of a diſtrict muſt ſend his quota towards this expedition: and even the great chief of O-Taheitee-eetee, or Tiarraboo, would join in it as his duty required. O-Too, perhaps, not being well enough ſkilled in the noble art of war, was not intended to command the fleet, and therefore gave the dignity of high-admiral to T-Owha, chief of Atahooroo; though he told us at the ſame time, that he would likewiſe be in the fleet, in the quality of a warrior, or as we might call it; of a *knight*. Theſe circumſtances ſufficiently prove, that their government is a kind of feudal ſyſtem; but it has much of that original patriarchal form, blended with it, which rectifies the many defects of the feudal government; and for that

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* *Hoa* ſignifies a friend, or chief-attendant on the king; we ſhould call him a *lord in waiting*, of which the king of Taheitee has a good number, doing duty in their turns.

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that very reaſon is infinitely ſuperior to it, being founded on principles of kindneſs and benevolence, and on that primitive ſimplicity, which bears always the ſtamp of perfect undegenerated nature.

However, upon comparing every circumſtance more minutely, as the Taheiteans allow themſelves to have formerly been cannibals, and likewiſe as their chiefs, Manahounes and warriors, are all of a fairer colour than the Toutous; it might not perhaps be inconſiſtent to ſuppoſe, that the firſt and aboriginal inhabitants of the South-Sea iſles, were of the tribe of the Papuas and people from New-Guinea, and its nighbourhood, and ſuch as we found at Mallicollo, Tanna, and the New-Hebrides, and therefore were like them men-eaters. It is probable, that either by accident, or on purpoſe, the ancient Malays of the Peninſula, of Malacca, gradually ſpread among the iſles of the Indian ſeas; firſt over Borneo, then to the Philippines; from whence they extended over the Ladrone iſlands, the New-Carolines, and Peſcadores; and laſtly, they removed to the Friendly-iſlands, the Society-iſlands, the Marqueſas and Eaſter-iſland, to the Eaſtward; and to New-Zeeland to the Southward. This migration ſeems to have been ſucceſſive, and perhaps ſeveral centuries elapſed, from the firſt removal of the Malays to Borneo, to the arrival of theſe tribes at New-Zeeland, and Eaſter-iſland. In each ſtation they acquired a new tincture of manners

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manners and customs varied by climate, and the particular situation of each land which they gradually occupied; and being no doubt, opposed by the first aboriginal inhabitants, it cost a great deal of bloodshed, labour, and time, before they could entirely subdue them. In the large islands, Borneo, Luçon, Maghindanao, and some of the Moluccas, they were not conquered, but retired into the interior mountainous parts; and are still existing and known under the names of Byajos, Negrillos, Zambales, Allfoories, &c. &c. In the Friendly and Society-islands, the aboriginal inhabitants were subdued, and became Toutous. Their more polished and more civilized conquerors, established a mild and humane kind of government, wherein they introduced the oriental or Malay-feudal system, and endeavoured to wean their new subjects from that cruel cannibalism, which generally prevailed among all the aboriginal black tribes of the South-Sea. In this benevolent and humane undertaking they at last so far succeeded, that the name only, and a faint tradition of the existence of such a custom in O-Taheitee, are preserved. This hypothesis likewise accounts for the various traditions of the Taheiteans, who know, for instance, in their neighbourhood, an isle called *Mannua*, occupied by men-eaters, which, according to this conjecture, is a proof of its being inhabited by the aboriginal black race of people, who are, as far as we know, all cannibals. In New-Zeeland, I am of opinion, that

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the more civilized Malay tribes, mixed with the aboriginals, and the harſhneſs of the climate, the roughneſs of the wild woody country, together with its great extent, contributed to preſerve cannibaliſm, and to form a coalition of cuſtoms, wherein many points of civilization were totally loſt, though the language was taken from the new-comers, and preſerved blended with ſome words of the aboriginal tribe. *Savage-iſland*, whoſe inhabitants we found very tawny and ferocious, might perhaps be another iſland, which the Malay tribes have not hitherto been able to ſubdue; nay, as the inhabitants of TANNA, were likewiſe acquainted with a language totally different from theirs, called the FOOTOONA language, or that of IRRONAN, which we found to correſpond with the dialect ſpoken at the Friendly-iſlands, it ſeems from thence to follow, that the Malay tribes ſtill endeavour to ſpread, and to ſubdue the aboriginal tribes in the various South-Sea iſles. Theſe hints, it is to be hoped, may induce ſome future navigators more carefully to examine the languages, manners, cuſtoms, temper, habit and colour of body of the inhabitants of the various South-Sea iſles, in order ſtill better to trace the origin and migrations of theſe nations; and to throw a ſtill greater light on this intereſting part of the Hiſtory of Man.

It is however remarkable, that the nearer we approach to the Weſtern or Friendly-iſlands, the greater is the reſpect, and the more

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more numerous are external marks of ſubjection ſhewn by the common people to their chiefs and kings. In Eaſter-iſland, and the Marqueſas, we obſerved hardly any difference between the ſubject and chief, if we except a more conſpicuous dreſs, ſome attendants and the name of *Areckee* or *A-ka-bai*. In O-Taheitee, and the Society-iſles, the lower ranks of people, by way of reſpect, ſtrip off their upper garment, in the preſence of their *Aree-rahai*. But at TONGA TABU and HORN-ISLAND, * the common people ſhew their great chief or LATOO the greateſt reſpect imaginable, by proſtrating themſelves before him, and by putting his foot on their necks. In the Ladrone iſlands, the Tamolas or nobles are likewiſe highly revered, and none of the common people dare come near them, for fear of defiling them.† Theſe circumſtances in my opinion, prove, that the natives of the South-Sea iſles changed ſome of their manners, and laid aſide part of that ſtiffneſs, formality and humiliating reſpect paid to their chiefs in proportion, as they removed from the country, which gave birth to their firſt anceſtors; and it is by this mixture of manners that the inhabitants of Taheitee have arrived at that happy mean which aſſigns the juſt bounds of prerogative to each rank of people, and thus places the true principles of happineſs on a firm and ſolid baſis. The king has a cer-

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* See Mr. Dalrymples Collection of Voyages to the South-Sea, vol. ii. p. 41, 55.

† Des Broſſes Hiſtoire des Navigations aux Terres auſtrales, tom. ii. p. 484, 499.

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tain reſpect ſhewn him, which is decent and neceſſary, and he is inveſted with a degree of authority and power, ſufficient to enable him to become beneficial to his ſubjects, without permitting him to oppreſs them; and he can acquire the title of father of his people, without ever becoming their tyrant. The chiefs of diſtricts are both a ſupport and check to the royal dignity: they form the great council of the nation, aſſembled on important affairs, eſpecially war and peace: without their conſent, the king cannot undertake any thing which might influence the public peace or ſafety, or puniſh any great Lord: without them the king is unable to execute great atchievements, for if they ſhould find him diſpoſed to abuſe his power, they would either refuſe to aſſiſt him with the force of their diſtrict, or they would, perhaps, aſſociate with thoſe whom the king might be willing to oppreſs, and therefore prevent his progreſs towards deſpotiſm, by balancing his power, or by oppoſing his increaſe of prerogative. The war againſt the chief of Morea, on the iſland of Imeo, which the Taheiteans propoſed to carry on, after our departure, and for which we ſaw ſuch great preparations confirms the truth of this aſſertion. The chiefs of each diſtrict being ſubject to the king, dare not oppreſs their own ſubjects, who, in that caſe would either bring their complaints before his paramount, or they might form aſſociations, in order to defend themſelves againſt his rapines, oppreſſion and deſpotiſm.

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The facility of procuring the neceſſaries of life, and even thoſe articles which are here reckoned to be luxuries; together with the humane and benevolent temper of theſe nations have hitherto happily prevented the oppreſſion of the Toutous; and if the morals of theſe people are not influenced and corrupted by the commerce and intercourſe with European profligates, and by the introduction of new luxuries, which can be procured only by hard labour and drudgery, the happineſs of the loweſt claſs of people, will, probably be of long continuance; and forbid it humanity and benevolence, that any one of us ſhould be wicked enough to form a wiſh or a plan to entail miſery and wretchedneſs, on a happy and harmleſs race of men! PRINCIPLES OF SOCIETIES.

They have undoubtedly cuſtomary laws and regulations relative to the good order of their ſocieties, for the ſecurity both of their property and of the lives of individuals, and puniſhments which are inflicted on thoſe who tranſgreſs theſe laws, and diſturb the public peace. At the time when one of the natives had ſtolen a muſket from a centry at the tents on Point Venus in O-Taheitee, the centry was carried on board under confinement, and previous to the puniſhment inflicted on him for the neglect of his duty, the articles of war were read before the whole ſhip's company aſſembled on deck; during this ceremony, it is cuſtomary for every body to be uncovered. The natives, among whom were ſome

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of the king's relations, obſerving that ſomething extraordinary was going forward, were particularly curious to know what the long *para-parou*, or ſpeech ſignified; I told them it was *the word of the great king of our nation*; upon which they all agreed among themſelves that it was MEERA; which I ſuppoſe from the above circumſtances to ſignify *law*, or *regulation*. They frequently told us that they killed thieves, by hanging a large ſtone to their necks and drowning them in the ſea: however, in a nation which has ſo much innocence and benevolence, and ſo few wants, the greater part of which, may very eaſily be ſatisfied, this crime muſt be rare. Murder ſeems to be a crime unknown among them; though we frequently ſaw ſome of them diſagree, and fight, yet the byſtanders were always ready to part them, in order to prevent further miſchief, and their hearts are not yet degraded to that degree of degeneracy and baſeneſs, as to permit them to poſtpone vengeance to another time, and to lay a plan in cool blood, and in a deliberate manner, to execute it with more certainty and ſecurity to themſelves. Like true children of nature, their paſſions, the great principles of ſelf-preſervation and defence, prompt them to puniſh and repel their real or imaginary wrongs, and as ſoon as they have ſhewed that they are not deſtitute of a noble reſentment, they yield to the endeavours of their brethren to eſtabliſh peace and harmony, and are as eaſily reconciled to their antagoniſts.

Among

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Among the chiefs, inſtances of matrimonial infidelity are to be met with, which ſeem therefore, as in Europe, to be the vicious prerogative attached to rank and dignity. The natives told us, that adultery is puniſhed with death among them, but we ſaw no inſtances of it, and thoſe on the part of the huſband which came to my knowledge, were no further puniſhed, than that the juſtly exaſperated wife, Juno like, treated her huſband, with all the flow of bad language ſhe was miſtreſs of, and that ſhe in great haſte and wrath imparted ſome boxes on the ear to the fair one, whom ſhe found deſirous of encroaching upon her prerogative rights.

Theſe happy iſles have almoſt every article neceſſary for the ſupply of their wants; nevertheleſs their manners are already ſo far poliſhed, that they like to be poſſeſſed of ſome articles chiefly of ornaments and luxury, which they cannot meet with in their own iſle, or at leaſt, not in ſuch plenty as in others ſituated in the neighbourhood. Bora-bora, and O-Tahaw, are both well provided with coco-nut-palms, from which they manufacture an oil, well known in the Eaſt Indies; the inhabitants of Taheitee and its neighbourhood, uſe this oil perfumed, by means of various odoriferous plants, and aromatic woods, as an article of luxury to ſtain and to perfume their cloth, and even their hair, and ſometimes their bodies. As the coco-nut-trees are not ſo plentiful in O-Taheitee as to enable the inhabitants to prepare a quantity of oil,

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oil, to satisfy the great demand for it, and as on the contrary, the natives of Bora-bora, and O-Tahaw, cannot manufacture such a profusion and variety of cloth as they do at O-Taheitee, where the paper-mulberry-tree is much cultivated; there are persons who every year undertake a voyage from Taheitee to Tahaw and Bora-bora, in order to barter great quantities of cloth, for joints of thick bamboo-reeds filled with coco-nut oil. The Low-Islands have a race of dogs with long white hair, which the natives employ in fringing their breast-plates or war gorgets; and these low islanders cannot cultivate the mulberry-tree on their sandy, barren ledges of lands, which includes their salt lagoons; therefore these reciprocal wants, form a kind of commerce between the inhabitants of the high and low islands, and a mutual exchange of superfluities. The red feathers of parrots are employed in ornaments for their warriors, being fixed at the end of the tassels, which they wear like queues, and likewise in small bundles tied together with coco-nut-core, which they make use of in order to fix their attention during their prayers. The O-Taheitee parrot has but few and very dirty red feathers, but more to the West are islands, which have fine parroquets remarkable for beautiful red feathers. One of these isles is low, and destitute of inhabitants, at about ten days sail from O-Taheitee and is called WHENNUA-NORA the *Land of red feathers*, to which the people from the

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Society-Isles sometimes resort, in order to procure some of these red feathers, for they are the most valuable article of commerce, and there is nothing which a Taheitean would not give or grant in order to acquire some of these precious feathers. We brought some bright red feathers from England, but they soon found out they were only cocks feathers, and died red, and for that reason did not esteem them; they took them indeed, but refused to give any thing in return. Whereas, when we came the second time, in 1774, to O-Taheitee after we had been to Tonga Tabu, where the natives make various ornaments of red feathers, we procured for them not only numbers of hogs, the most valuable article of trade, but likewise mourning dresses, which the natives refused to part with before, when Mr. Banks was there, and during our first stay in their happy isle. The rage after these trifling ornaments was so great, that Potatoa a chief, whose magnanimity and noble way of thinking, we never questioned before, wanted even to prostitute his own wife, for a parcel of these baubles. All kinds of iron tools are likewise become great articles of commerce, since their connexions with Europeans. The Spaniards first made the inhabitants of all these islands acquainted with iron; and I am of opinion that even its O-Taheitean name is of Spanish origin; for when *Oliver van Noort* came in the year 1600 to *Guahani* one of the Ladrone Islands, he saw more than 200 canoes full.

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full of natives coming off with coco-nuts, bananas, ſugar-canes, fiſh, &c. and all wanted to exchange theſe refreſhments for iron, crying aloud *hierro! hierro!* which is the Spaniſh name for iron, and in its pronunciation not very different from *yuree*, the Taheitean word for the ſame; and as the Ladrones as well as Taheitee, or at leaſt ſome neighbouring iſles, were firſt ſeen by Spaniards, there is very little doubt but the name of *yuree* is originally meant for *hierro*. The loſs of one of Roggewyn's ſhips in 1772, on the low iſland of O-Anna, gave theſe iſlanders again a freſh ſupply of iron. The anchors loſt by Mr. de Bougainville at *O-Hidea* were afterwards taken up by the natives, and the king of Taheitee ſent one as a rare preſent to Opunee king of Bora-bora. Laſtly the Engliſh imported ſuch quantities of iron-tools, eſpecially hatchets, chiſſels, plains, ſaws, gimlets, and ſpikes and nails of all dimenſions, that this commodity will not eaſily come into diſuſe among them, and is ſtill leſs likely to be entirely forgotten. Eſpecially as all theſe nations are very remarkable for preſerving the ſmalleſt pieces of iron for many years: thus for inſtance, when we landed at *Tonga-tabu* one of the natives ſold a very ſmall nail carefully faſtened in a handle of hard wood, and tied to it by ſtrings of coco-nut-core. This nail was undoubtedly left by Taeſman, who was there in 1643, and conſequently had been preſerved 130 years, and is now lodged amongſt other curioſities in the Britiſh Muſeum.

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Beads of glaſs, ſince our ſeveral expeditions to the South Seas, are very common; as incredible quantities have been exchanged in theſe Seas for coco-nuts, yams, and bread-fruit. It is however, remarkable, that in O-Taheitee, thoſe which were white and tranſparent were preferred, in the Friendly Iſlands; the black beads were in high eſteem; and green ear-rings, and green or red glaſs buttons were moſt eagerly ſought after in New-Zeeland. Each of theſe nations therefore had a peculiar taſte. At *Tanna* the caſuarina-wood for clubs was brought from *Irromanga*, hatchets made of black ſolid lava came from *Anattom*, and thoſe of white ſhell from *Immer*. So that each country gives up its ſuperfluities in exchange for other articles, which are leſs common, and deemed either really neceſſary, or an improvement, or an article of luxury. PRINCIPLES OF SOCIETIES.

The acquiſition of the various articles of commerce form the wealth and the opulence of individuals in theſe iſlands. Our ſtay at O-Taheitee has raiſed many perſons from a low rank, and from poverty to affluence and a higher claſs; for when a man at Taheitee had acquired ſome wealth, he could keep it for his own uſe, or was permitted to diſpoſe of it in ſuch a manner as he pleaſed. This likewiſe was obſerved at Eaſter-iſland, the Marqueſas, New-Zeeland, the New-Hebrides and New-Caledonia: but at the Friendly-iſlands the caſe was otherwiſe; *Attaha*, one of the inferior chiefs,

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was obliged to deliver all the preſents he had received to their LATOO-NIPOOROO; this was likewiſe practiſed by all the other chiefs; the prieſt was not obliged to pay this kind of homage or acknowledgment of his ſubjection to the great chief. Whenever the lower ranks of people at Taheitee ſtole any valuable articles, the chiefs either ſeized the whole booty, or at leaſt ſhared the ſpoils with their Toutous, though they never deprived them by force of the effects, which they received in exchange for their eatables, cloth, furniture, and implements of war. However we found, that after ſome time, all this acquired wealth flowed as preſents, or voluntary acknowledgments into the treaſure of the various chiefs; who it ſeems were the only poſſeſſors of all the hatchets and broad axes; the uſe of which, they granted to their ſubjects, on certain occaſions, probably for ſome acknowledgment. What makes me more inclined to believe this circumſtance, is the account of the very ſame cuſtom obſerved at the *Caroline Iſlands*, where the inhabitants appropriate all the iron which they find on wrecked ſhips, to their *Tamoles* or chiefs, who have ſuch tools made from them, as the ſize of the iron will admit, which they let for a high price to their ſubjects. * But the real wealth of the natives at Taheitee, the Society-iſlands, the Marqueſas, the Friendly

* Des Broſſes Hiſtorie des Navigations aux Terres auſtrales, vol. ii. p. 485.

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Friendly-iſlands, and even Eaſter-iſland, conſiſts in the poſſeſſion of their lands, which the manahounes cultivate with the aſſiſtance of their families; whereas, the poſſeſſions of their chiefs, as well as the royal demeſnes, are under the inſpection and cultivation of their own toutous: they feed the hogs and dogs of their maſters, which conſtitute their greateſt riches; they cultivate the banana-trees, take care of the bread-fruit and apple-trees, ſugar-canes, yams, eddoes, taccas, potatoes, and other uſeful vegetables; they plant the mulberry-trees, and manufacture their bark; lay up ſtores of mahei or ſower-paſte, and provide the indolent chiefs with food and raiment. It appears from hence, that the real wealth and opulence of their chiefs depends upon the number of toutous, as well as upon the extent of demeſne they are poſſeſſed of. And that the toutou ſeems to be a kind of property of the tribe of chiefs, alienable according to the pleaſure of the maſter, I collected from the following circumſtance; as ſoon as our friend Maheine had found his relations on O-Taheitee, he was preſented by them with a boy about 13 or 14 years old, called *Poë-tea-tea*, who became to all intents and purpoſes his toutou, and was immediately remarkably attached to his new maſter and his friends on board the ſhip.

We have already enumerated hogs and dogs among the riches of the natives of Taheitee, to which we added goats in 1773, that

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had already produced a couple of kids, at our return to Taheitee in the following year; but it is remarkable, that these few domestic animals, were not even common over all the South Sea isles. In all the low islands they have dogs, but no hogs; at the Friendly Islands and Tanna, they had hogs, but no dogs; at New-Zeeland they had no hogs, and at New-Caledonia they had neither hogs nor dogs. We gave at Amsterdam and Tanna the first dogs; at New-Zeeland the first hogs and fowls, and at New-Caledonia we left a couple of dogs, and another of pigs. They must formerly have had dogs at Amsterdam, because they knew the animal, and were acquainted with its name, *ghooree*; but have lost the species, as it should seem, by some accident. Though both the sorts of quadrupeds which are found in the South Seas, are very prolific, thrive in the fine climate amazingly well, and soon come to maturity, they were however, not in such abundance, that every family could use them for common food; but the bulk of the nation was obliged to subsist chiefly on vegetables, the produce of their industry and moderate labour. In this circumstance I find a vestige of the infinite wisdom pursued in the works of nature, and her general constitution, and trace therein a part of the grand plan, which has no other aim than the greatest perfection of the whole.

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The animal creation is not so much in the power of man, that he can by his industry enlarge its prolific quality; for each animal is confined by invariable laws of nature to certain limits in the propagation of its species; if therefore the whole human race should subsist merely on animal food, and all mankind lead a pastoral life; man would gradually sink into a situation, which is entirely inconsistent with his physical, moral, and social happiness. Cultivation, or the art of raising by his industry, care, and labour, a sufficiency of roots, herbs, and fruits for the subsistence and other purposes of human life, is the only foundation of all the felicity which man ever can attain in this life. All vegetables, especially those which are now become in various countries and climates, the chief food of mankind, naturally thrive with great ease, and are moreover, capable of being multiplied in a stupendous proportion, by human industry. The nourishment which they afford is salubrious, and well adapted to the structure of the organs, and the whole system of animal functions in men. The infinite variety they afford, the excellent flavour and rich taste of some vegetable productions, would soon cause them to become the food of men, without ever cloying them. But there is something still more advantageous in the universal and improved culture of vegetable food; the more vegetables are cultivated, the more they become improved; which we may easily confirm by the infinite variety of

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well taſted apples and pears, cherries and plumbs, peaches and apricots, cabbages and turnips, potatoes and yams, and ſo many other fruits, herbs and roots, which are meliorated by continued cultivation, and have afforded us new varieties and ſorts of the ſame kind of vegetable. The more and the better all vegetables are cultivated, the more they enable mankind to aſſociate together, and to communicate to each other their aſſiſtance, their experience, their ideas and improvements. Invention is more and more at work, life acquires new eaſe and comfort, the ties of ſociety become indiſſoluble, all ſocial feelings are rendered poliſhed and refined; every one ſhares, in a higher degree, the happineſs, and is better enabled to alleviate the adverſities of his fellow-creatures; univerſal peace and order become more and more a check upon the paſſions, and their wild flights; theſe regulations are gradually turned into laws, and cauſe a more general equality of temper, and manners; this is the next ſtep to convince them of the great influence of vice and virtue, on their perſonal and ſocial happineſs; and at laſt conſcience and moral ſentiments begin to awake in every feeling breaſt, and prepare every one for that degree of happineſs and enjoyment, which humanity can attain in this tranſitory life. This therefore ſhews evidently, that mankind, in a paſtoral ſtate, could never attain to that degree of improvement and happineſs, to which agriculture, and the cultivation of vegetables, will eaſily and ſoon

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lead them. I do not, however, intend ſo far to extol agriculture, and vegetable food, as to inſiſt that mankind ſhould entirely neglect the culture, and domeſtication of animals; I am rather of opinion, that a moderate ſhare of animal food, mixed with vegetables, is very well adapted to our organization, and that it is the joint care of animals and agriculture, which leads mankind to the higheſt degree of content, and paves the way to perfect happineſs. I congratulate, therefore, the Taheiteans, who are poſſeſſed of ſuch a variety and profuſion of well-taſted and ſalubrious vegetable food, cultivated on their happy iſle, together with two domeſtic quadrupeds; and who made in our laſt voyage, a new acquiſition of the goat, a domeſtic animal; and to whoſe uſe Captain Cook, in his preſent voyage, carried rams and ewes, as well as bulls and cows; becauſe ſo valuable a preſent will enable that brave people to make many improvements in their domeſtic life. If rice, eſpecially that kind which grows on hilly grounds, without requiring to be watered, as the common rice does, mayz, ſome pine-apples, cheſnuts, dates, oranges, and lemons, together with the ſago-palm, were added to their vegetables; they would form the moſt rational preſent, which ever was offered to a nation, and the moſt grateful returns we could make, to a kind, humane and hoſpitable people, who generouſly gave us all the refreſhments we ſtood in need of, and enabled us to finiſh a navigation, which will for ever ſtand

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ſtand unparallelled in the annals of all nations. The man who ſhall carry theſe vegetable productions to Taheitee, and the South-Sea iſles, and at the ſame time teach the inhabitants their cultivation and uſe, will become a benefactor to mankind; he will deſerve to be ranked with Triptolemus, Orpheus, and other heroes, and merit the thanks and reverence of grateful poſterity.

The happineſs reſulting from the fertile climate, and from a profuſion of fine vegetable productions, raiſed by the induſtry of the Manahounes and Toutous in Taheitee, and its neighbourhood; the very moderate and mild ſervitude of their Toutous, the order and regulation in their domeſtic ſocieties, the benevolent and paternal affection of their chiefs, their aſſociation for the ſecurity of property and liberty, their commerce, wealth, and enjoyments, give us the beſt idea of the more refined and exalted ſituation of the inhabitants of Taheitee, and the Society-iſlands, above all the reſt of the nations we viſited in the courſe of our voyage. Convinced of the rectitude of order, and juſtice, as far as they relate to human ſocieties; ſenſible of the pleaſure ariſing from each common act of benevolence, and fired with the generous ſpirit of communicating happineſs to as many as are willing to form with them the ſame ſociety; they are likewiſe capable of that noble and diſintereſted deſire to work for the common weal as much as lies in their power, which we call *public ſpirit* or *true patriotiſm*, and what

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is ſtill better, they actually ſhew it on many occaſions. I have ſeen a man eating a ſmall proportion of bread-fruit, or other food, and nevertheleſs ſharing this trifle out amongſt ſeveral of his brethren, whilſt it would admit of diviſion. The ſolicitude of their chiefs, to ſtrike a good bargain for their ſubjects, when they brought fruit, fiſh, or hogs to market, is likewiſe another proof of this aſſertion; nor can I omit the aſſiſtance they generally gave to one another; the deteſtation in which the better ſort of people held all the thieves and robbers; the ſtriking increaſe of happineſs we obſerved in O-Taheitee, were, at our ſecond arrival, after an abſence of eight months, owing to the encouragement and minute inſpection of the ſituation of every individual family under *O-Tu*, the reſignation of the command of the fleet to T-Owha, made by O-Tu, and the readineſs of T-Owha to undertake that expedition, though ill of the gout; the wiſdom and public ſpirit with which they politely declined the aſſiſtance offered them by Capt. Cook for conquering the revolted iſland of Imeo. All theſe particulars give me the higheſt opinion of their *true patriotiſm*, and noble attachment to the weal of their country. This great maxim is the firſt germ of all noble ſocial feelings and ſentiments: it aſſigns to the various relations of man their true valour, and bids him act in conſequence of each of them; it preſcribes the ſimplicity and unity of principles, and the harmony of means for acting upon

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thoſe principles. It teaches individuals to ſcorn to enjoy advantages which cannot become univerſal, or muſt be purchaſed at the expence of the happineſs of the community, and makes of every individual a hero; who, if he lived in countries, where poets, orators, and authors, for gold laviſh their incenſe, would have ſuch monuments of eloquence raiſed to his memory, as are but too common in our adulatory age; and had he been born with thoſe noble ſentiments at Athens or Rome, he would have deſerved to rank with Ariſtides, Ageſilaus, Leonidas, Fabius, Africanus, Cato, and the ſacred bands, who fill the temples of Grecian and Roman patriotiſm.

The whole that has been ſaid of the happineſs of the Taheiteans, and inhabitants of the Society-iſlands, is not applicable to the reſt of the nations in the tropical iſles. In the Friendly-iſlands, cultivation is carried to a higher degree, which is likewiſe evident from the fences and partitions, ſo ingeniouſly contrived, and artfully executed between the various poſſeſſions of each individual family: but at the ſame time their government has ſtill much oriental deſpotiſm and ſlaviſh ſubjection to chiefs and their LATOO, derogatory to that dignity and liberty, to which nature deſtined all her ſons and daughters: the firſt is owing to the great population of theſe iſles; the latter proves them to be nearer to that country, from whence they came, and where abject humiliations for chiefs and

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princes are common, and originally were introduced by prepoſterous obſequiouſneſs and abject flattery, and afterwards eſtabliſhed and propagated by tyranny and oppreſſion. We were witneſs to their proſtrations before their chief, but our ſtay was too ſhort to be able to judge of their laws, and form of government. We found *Attaba* to have great authority at the place where we landed; there were, however, other chiefs, who had certainly more authority than he, which went ſo far, that he was afraid of ſitting at dinner with us in their preſence. One of theſe ſuperior chiefs had great influence and weight with all the people in the boats, to whom ſome of our friends gave the title of lord high admiral; their prieſt was likewiſe a man of conſiderable authority, even to ſuch a degree, that when all the other chiefs conſtantly gave the preſents they had received from us to the LATOO, the prieſt kept to himſelf every thing that was preſented to him; which ſeemed to intimate the ſubjection of their chiefs to LATOO, and the great authority this chief had aſſumed to himſelf. Several other chiefs were ready enough to order their people to do ſomething, and we found their orders always reſpected; but I never ſaw them take any goods or fruits, from the inferior people, in order to give to us; nor did they rob their people of the things they had exchanged for various articles; this behaviour, ſhould perhaps, teach us to think that they have made regulations for ſecuring to individuals, perſonal

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property in these isles. In the Marquesas and Easter-island, there was hardly a distinction observable between the magistrate and the subject; they had the name of the dignity, they had some attendance, and were, on the arrival of strangers, better dressed; but their authority, if we may judge, from the few instances, we could observe during our short interviews with these people, seemed to be more similar to the advice of a benevolent parent, than to the imperious dictates of a king. In the more Western isles of Mallicollo, Tanna, and New-Caledonia, we observed likewise chiefs, under the denominations *Aleeghee* or *Areekee*, but they were, upon the whole, not distinguished from their subjects, by rank or authority, and seem to enjoy only an hereditary title; and as to the laws of these people, we are not presumptuous enough to talk of things, which we had neither opportunities, nor time, nor sufficient knowledge of the language to observe. They had plantations in these isles, and we saw that several small families cleared spots of ground for that purpose, and it is very natural to suppose that they likewise reap the fruits of their labours. In general it appeared to us, that O-Taheitee and the cluster of high isles in its neighbourhood, were the only spots where civilization had made some progress, and where these advantages were not again over-balanced by defects in the constitution or government. I cannot dismiss this subject without observing, that though the tropical isles of the South-

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South-Sea, never may, perhaps, be so unhappy, if left to themselves, as to be again degraded to a more debased condition; they will on the other hand, never be able to make, unassisted, any great or rapid progress towards a higher civilization, or more improved condition, because the small size of their isles will not admit of these improvements: and in case they should attempt to make conquests and unite several small islands into one political body; many centuries must elapse before the little jealousies between the vanquished people and the conquerors will wear off, and by a happy coalition one powerful nation can be established; which, however, is absolutely required, if they are to make large strides towards improvement in science, morality, arts, manufactures, or husbandry: and thus together form one great scene of happiness.

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CHAP.

CHAP. VI.

On the Principles, Moral Ideas, Manners, Refinement, Luxury, and the Condition of Women, among the Nations in the South-Sea-Iſles.

——— PRIMÆ DEDERUNT SOLATIA DULCIA VITÆ. *Lucretius.*

MANNERS. THE happy inhabitants of the tropical iſlands in the South-Sea, occupy a rank in the claſs of human beings, which is by no means ſo deſpicable, as might, at firſt ſight, be imagined; and the Taheiteans and their neighbours in the Society-iſlands, may claim the higheſt rank among theſe nations. They are certainly, for many reaſons, ſuperior to the cannibals in New-Zeeland, and ſtill higher above the rambling, poor inhabitants, of New-Holland, and the moſt unhappy wretches of Tierra del Fuego. In the ſame proportion the people at Tanna, and Mallicollo, exceed thoſe at New-Caledonia; the inhabitants of the Marqueſas, ſtand higher than the people of the Friendly-iſlands, and theſe muſt yield to the Taheiteans, as every circumſtance concurs

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to confirm their high rank. The organization of their bodies MANNERS.
ſeems to me to be the moſt happy and ſuſceptible of enjoyment and improvement, of all the other nations before-mentioned; the climate they live in, the vicinity of ſo many iſlands, peopled by the ſame nation, ſpeaking the ſame language, enjoying the ſame kind of government, accuſtomed to the ſame laws and regulations, inſtructed in the ſame principles, having the ſame ideas in regard to morality and religion, the ſame food, dreſs, habitations, and general manners; in a word, every thing contributes to connect and to form them for a higher degree of enjoyment.

Men, of different inclinations, who are endued with rational ſouls, and capable of forming various ideas, are found to make advances to perfection only, when they ſtrive to acquire a competent knowledge of a variety of objects, and take care to admit no other ideas among thoſe who may ſerve them in life, than ſuch as are perfectly conformable to truth, and which expreſs to the mind the real qualities and properties of things; and when their thoughts and actions are directed by the ſtrict rule of right. In this caſe they will ſoon diſcover that though there be a ſtrong inſtinct in their breaſts, prompting them to appropriate as much good to themſelves as poſſible, yet the enjoyment of it will ſoon become more and more imperfect, and unhappineſs, in ſome meaſure, the conſequence; but by transferring acts of benevolence to other men, they ſoon open to themſelves

MANNERS themſelves an inexhauſtible ſource of enjoyment, becauſe benefactions of an incredible variety may be beſtowed upon an almoſt infinite number of fellow creatures, and thus we ſee the great *principles* of all rational human beings, ought to be CANDOUR and HUMANITY; which alone are capable of giving to all their ideas, deſires, and actions, the true direction towards real, laſting happineſs, and raiſe their nature to that exalted dignity, for which they were originally intended.

The tropical nations of the South-Seas conſidered in this point of view, ſeem to be deficient neither in *candour*, nor in *humanity*. For it is impoſſible to deſcribe the inquiſitive curioſity of theſe people relative to our country, government, religion, and the various arts by which our curious manufactures were carried on, I mean ſuch as fell under their eyes, and could be underſtood by them. I was obliged to explain to them the difference between our ſtuffs made of wool, ſilk, cotton, and linen; by telling them the firſt was made of the hair of a *hog with teeth on the forehead*, (for thus they called our ſheep when they firſt ſaw them) the ſecond, I explained to be the thread of a caterpillar; the third, I ſhewed to be a ſpecies of their cotton called *E-Vavài* or *Goſſypium religioſum*, Linn. which is found in their iſles, and the laſt I obſerved to be a kind of thread of a plant or graſs; and they were all very attentive when I uſed to draw and twiſt ſome threads of

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their cotton, in order to ſhew them the poſſibility of uſing it for MANNERS
that purpoſe. They were likewiſe very attentive while our armourer was forming hatchets on the anvil, or the carpenters grinding their tools; for which reaſon, Captain Cook gave them ſome grinding ſtones, and took care that they ſhould be inſtructed in the proper uſe of theſe inſtruments. We were often obliged to explain to them our belief in the divinity; they uſed to aſk how we called him in the Britiſh language, and endeavoured to pronounce the name of GOD; they were all attention, when according to their deſire God was explained to be *without a maker*, inviſible, almighty, and infinitely good; they enquired whether we addreſſed him in prayer, and whether we had prieſts and *marais*, i. e. places of worſhip, ſerving at the ſame time for burying places. All which, proves their inquiſitive mind, and that they endeavour to acquire as many ideas as lye in their power. Nor were they deſtitute of knowledge and a ſyſtem of uſeful ideas, preſerved among the wiſe men of the nation; I include in this ſtock of ideas, their ſkill in cultivating certain plants for food and dreſs, and the choice of a proper ſoil for each of them, the various operations in preparing them for the various purpoſes required; the curious, and often very neat dreſſes, utenſils, arms, and ornaments manufactured by them, with the ſimpleſt tools; their knowledge of the birds, fiſhes, and plants in their iſlands and their neighbourhood; their acquaintance

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MANNERS with the winds and ſeaſons, the names of the ſtars, and their riſing and ſetting, and a knowledge of the ſituation of a conſiderable number of iſlands in thoſe tropical ſeas; the art of navigating by the ſun in the day time, and by the moon and ſtars in the night: the number and names of days in a lunation, and of lunations in a year. This exerciſe of their memories in retaining the various names expreſſing theſe ideas, and of other mental faculties confirming by their own experience the truth of the phænomena, communicated to them by their parents and teachers, gives them a turn, and as it were a predilection for the examination of truth; which, when applied to the purpoſes of common ſocial life, gives a ſtrong tincture of honeſty and candour, which is moſt particularly neceſſary in all human tranſactions. But if we ſhould require proofs of their humanity, we need only to quote the navigators in the Reſolution, Adventure, Endeavour, Dolphin, and Mr. de Bougainville, at Taheitee, as ſo many monuments of their humanity and friendly diſpoſition: they provided us with refreſhments and vaſt quantities of hogs; they aſſiſted us when we were often unattended a great way up in their country; they vied with each other in ſhewing us marks of their kindneſs and hoſpitality, invited us to ſit down in the cooling ſhade of their houſes, rubbed and chafed our wearied limbs, offered us a delicate dinner, prepared from the beſt of their fruits, undertook to become the bearers of

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our victuals and acquisitions of plants, shells, and fishes, in our excursions, carried us over all waters and rivulets on their backs, and fetched the ducks and other birds which we had shot; they entertained us with songs and dances; made us presents of cloth and provisions; and some of them were polite in every acceptation of the word, and treated us in a manner, which cannot but leave in our minds the most lasting impressions of their courtesy and benevolence. MANNERS.

These great principles of *candour* and *humanity*, which are so well understood, and so generally practised by these nations, have no doubt, a great influence on their MORALS and MANNERS. The first dawnings of the *law of nature*, taught them to be cautious, and abstain from doing harm to their fellow creatures; but *morality* gives the great practical lesson to make as many fellow creatures happy as possible. I will not however, maintain that those feelings of *moral sense* are absolutely the same at all times, in all climates, and among all nations: for I am well aware, that often the same nation approves of an action at one period of time, and at another condemns it. I am likewise not so ignorant as to deny that the same action is condemned by one people, and approved by another, or at least not reckoned to be criminal; because nations are in this respect likewise, similar to individuals: they gradually ripen to an age of maturity, and acquire in every age a more steady,

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MANNERS and more refined moral taſte; and if ever the bulk of the nation, or part of it, or even only individuals can diſpel the prejudices ſurrounding their minds, and conquer the paſſions which influence their wills; they are ſure to act according to the dictates of their conſcience, which is in that caſe *common ſenſe relative to morals*, and the voice of the divinity ſtrongly admoniſhing them of their duty; they then become ſenſible, that the actions of men living in a ſociety, are by no means indifferent to the community, but that every individual is accountable for them to his fellow creatures. Upon the whole, though the actions of theſe happy people generally have a tendency to humanity and benevolence, they are actuated in ſome meaſure by a ſpirit of ſelfiſhneſs, the great root of corruption, and are therefore ſimilar in that reſpect to the reſt of mankind, whoſe actions are a compound of a ſelfiſh and humane, benevolent behaviour; which is made uſe of according as prejudices, national character, and other circumſtances prompt them to follow either the one or the other impulſe: and even when ſelfiſhneſs carried away their deſires, to covet for inſtance, the iron-ware, which we had, and induced one or more of them to purloin a nail or knife or ſome ſuch trifle, they were however, not ſo abſolutely loſt to all moral ſenſe, as not to ſhew by their immediate flight, that they had wronged us: nay, often ſome of the natives, who were either attached to us from principles

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of gratitude, or had a more generous and liberal way of thinking, and entertained ſtricter notions of morality, warned us againſt ſome perſons whom they ſaw in the croud preſſing officiouſly upon us, or whom they had ſeen once fruſtrated in their attempts upon our pockets; which at leaſt proves ſo much, that though ſome were now and then tempted to act contrary to the impulſe of conſcience on account of an irreſiſtible temptation, ſuggeſting for a moment the principles of ſelfiſhneſs, there were however others who acted ſtrictly conformable to the dictates of morality; and even the criminals themſelves were not without remorſe, or inſenſible that their action was puniſhable, being wrong, and that we were able to call them to a ſtrict account for it, and retaliate the wrongs they had been committing againſt us. I cannot leave this ſubject without mentioning that I found immorality and ſelfiſhneſs, far more prevailing among the great and the very loweſt, than among the middle ranks of people. King O-Too with his ſiſter Tourai, being once on a viſit to Captain Cook, were introduced into his ſtate-room, where conſtantly a quantity of iron-ware lay, expoſed, in order to have as much of it ready, as was required for the trade which was conſtantly carried on. The Captain and I were the only perſons who were with them. Captain Cook was called out by the officer on deck upon ſome buſineſs that admitted no delay, he therefore deſired me to ſtay with the royal family. MANNERS.

The

MANNERS. The absence of the Captain, and the great heaps of iron, suggested to Tourai the idea of profiting by this opportunity, and prompted her to purloin some of the fine iron goods; she desired her brother to divert my attention; he called me to the window and wanted to shew me something in the canoes surrounding our ship; I suspected their design, and went where he called me, but kept an eye on O-Too's sister, who immediately seized two large ten inch spikes and concealed them carefully under her garment. I acquainted Captain Cook at his return with the transaction, but we agreed to dissemble, and not to alarm their fears, that the briskness of the trade might not be interrupted. However, I made the following observations, that the sight of such treasures of iron, must have been very great temptations; because Tourai and O-Too might have had two or more spikes, upon barely asking for them, and that therefore the idea of acquiring them by stealth, should seem to be a sudden irresistible impulse, capable of overcoming the turpitude of the action, the danger and shame of being exposed and regarded as thieves, and the king becoming himself accessary to the meanest transaction; however, the complaisance of the king for his sister, was equally evident, and in some measure makes his condescension in my opinion, less culpable; nor would I wish by this observation to brand Tourai or O-Too, as people of abandoned morals, and capable of committing any immoral

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action; for I am perſuaded from other reaſons, that O-Too, was a well meaning man, inclined to fear that we might abuſe the ſuperiority of our power againſt him and his people; but at the ſame time benevolent, good-natured, and ſtudiouſly promoting the wealth, power, and happineſs of his people: though I believe him incapable of acting in ſo noble, diſintereſted, and generous a manner as Towha, who would have ſhone as a great character, in whatever nation he might have happened to live. The character of the ſiſter, is in my opinion, leſs amiable than that of O-Too, eſpecially if it be true, what a great many uſed to tell us, that ſhe was a kind of a *Meſſalina*, demeaning herſelf ſo low as to admit Toutous to her embraces. Beſides this inſtance of the immorality and ſelfiſhneſs of the great, I can add another; *Wainee-ùu* and *Potatou* her huſband, were ſo greedy after the poſſeſſion of red parrots feathers, that having ſold all the hogs, which they poſſibly could ſpare, together with a fine helmet, ſeveral breaſt-plates, and a mourning dreſs, they agreed to proſtitute *Wainee-ùu*, and ſhe in conſequence offered herſelf to Captain Cook, and appeared as a ready victim. MANNERS

— — — *Tunica velata recincta.*

I muſt confeſs, having received a favourable and great idea of Potatou's character, this tranſaction made me aſhamed of him; and being before elated with the thought of having found a nation, where

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MANNERS where one might at leaſt find to the honour of humanity, leſs degeneracy joined to an amiable innocence and primitive ſimplicity, my ſpirits were damped by this unexpected ſcene of immorality and ſelfiſhneſs, in a family where I leaſt expected to hear of it.

The principles of chaſtity we found however, in many families, exceedingly well underſtood and practiſed, to the great ſatisfaction of all thoſe Europeans in whoſe hearts lewdneſs had not yet effaced every notion of purity and morality. I have with tranſport ſeen many fine women, who with a modeſty mixed with politeneſs, which would have graced the moſt exalted characters of our polite nations, refuſe the greateſt and moſt tempting offers made them by our forward youths; often they excuſed themſelves with a ſimple *tirra-tane*, "I am married," and at other times they ſmiled and declined it with *eipa*, "no." But it is neceſſary to obſerve that a nation ſtill enjoying that juſt and noble ſimplicity of manners, living in large houſes with ſeveral families together, in the midſt of their children, cannot conceal certain actions, which none of our Europeans, who have feelings and breeding, wiſhed to commit in ſo great companies; this naturally makes all their children acquainted with tranſactions of which ſome European matrons perhaps may have no ideas, nor has love, and all its concomitant, and moſt myſterious endearments, enjoyments, and conſequences, ever been ſtamped in theſe happy iſles with a notion

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of turpitude. Virtuous women hear a joke without emotion, MANNERS which amongſt us might perhaps put ſome men to the bluſh. Neither auſterity and anger, nor joy and ecſtaſy is the conſequence, but ſometimes a modeſt, dignified, ſerene ſmile ſpreads itſelf over their faces, and ſeems gently to rebuke the uncouth jeſter, for not being better acquainted with the purer enjoyments of modeſt and virtuous love, and with the practice of that reſpect which is due to thoſe who are its religious votaries.

Thus the conſtant and excellent principles of *candour* and *humanity* teach the better individuals of this happy nation, the diſtinction between right and wrong, and ſpread, and confirm the notions of virtue and morality among them. But the actions of a people may be likewiſe conſidered, as far as they become expreſſive of a character peculiar to them, by which they give us an idea of their MANNERS. There are nations that have ſuch ſtrong outlines in their characters, forming ſo eſſential a contraſt between them and other nations, that it is very eaſy to catch them, and to deſcribe a picture perfectly reſembling the original; the warlike inſtitutions and laws of Lycurgus gave ſuch a ſtrong character to the Spartans, that nothing was more eaſy than to give a picture of Spartan manners: but to diſtinguiſh the inhabitant of Orchomenus from that of Megalopolis or of Mantinea and Tegea,

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MANNERS by theſe characteriſtics was a more difficult taſk, becauſe the features were ſo ſmall, that the diſtinction was, as it were entirely loſt. The characteriſtics of the South-Sea nations, are, upon the whole, very different from ours, and may therefore eaſily be traced; however, the difference between them and all the nations, which are juſt emerging from barbariſm, is not ſo very conſiderable, nor is it poſſible to point out ſuch features as would at once diſtinguiſh the inhabitants of each particular iſland, from thoſe of the others in its neighbourhood, eſpecially as our ſtay among them was ſo ſhort, and their language ſo little underſtood by us: we ſhall nevertheleſs endeavour to give ſome faint outlines of their manners.

The *general external appearance* of theſe nations, is, no doubt, very ſtrongly contraſted to ours, and we have already mentioned ſomething upon that ſubject in the ſection, treating of the colour, ſize, habit of body, &c. &c. of theſe nations, which renders it unneceſſary to repeat the ſame argument again.

DRESS characterizes people moſt remarkably, nor is this uniform in the South-Sea-Iſlands. The inhabitants of Tierra del Fuego, we found deſtitute of ſuch parts of dreſs, which modeſty would employ, and neceſſity enjoin; in the Weſtern iſlands of the Pacific Ocean, where the climate makes dreſs not abſolutely ne-

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ceſſary, the nations covered only thoſe parts of their body, * which, by an almoſt general agreement, every nation on earth wiſhes to ſcreen; but though their males, were, to all appearance, equally anxious in this reſpect with their females, this part of their dreſs ſerved only to make that more conſpicuous, which it intended to hide; and this device ſeems to be invented with as little delicacy and judgment as the famous *cod-piece*, which a few centuries ago made part of a man's dreſs in Europe; whether the care of preventing theſe parts from being wounded or hurt by branches of trees, briars, and inſects, or real principles of propriety and modeſty had firſt induced them to uſe ſo ſtrange a method for covering their genitals, I cannot decide; however, among theſe ſame nations we obſerved, that only the age of maturity inſpired them with theſe ideas of decency and modeſty; for their little boys were ſtark-naked, and little girls, below the age of eight years, had no other cover than a wiſp of ſtraw before, and another behind, fixed to a ſtring tied round the waiſt. But though all theſe nations had no other parts of dreſs, to ſatisfy neceſſity in a cold climate, or modeſty in a warmer; they found it nevertheleſs neceſſary to uſe various ornaments: in Tierra del Fuego, they painted their faces red, with MANNERS

* It is therefore remarkable, that in the engraved figure of a Mallicoleſe, which is found in Capt. Cook's Narrative of the voyage, a drapery has been ſpread over the body of the figure, in direct oppoſition to the univerſal cuſtom of that country.

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MANNERS with a kind of ochre; in Tanna they ſometimes laid on their faces black and white paint, in oblique alternating bands; the hair was ſometimes divided into a great number of ſtrings, not thicker than a crows-quill, and wrapt in ſtrings of the bark of a bindweed, *(convolvulus)* which gave their heads a very odd appearance; the ears were generally pierced, and ornamented with rings of Tortoiſe-ſhell; nay, in New-Caledonia and Eaſter-Iſland, we found the hole enlarged to ſuch a ſize, that four or five fingers might eaſily paſs through, and the under part hung down almoſt to the ſhoulders. Theſe preternatural apertures were commonly diſtended by ſcrolls of the elaſtic ſugar-cane-leaves, or loaded with huge ear-rings, ſometimes amounting to eighteen in number. The inhabitants of the Friendly-iſlands had the ear perforated by two holes, through which they thruſt, horizontally, a piece of bamboo reed, or a cylinder of tortoiſe-ſhell, or other ſhell. In Mallicollo and Tanna, ſeveral men had the *ſeptum narium* perforated, and the hole filled with a cylindrical ſtone; the heads of moſt of the men were bare; that of women often covered with a leaf of the *arum eſculentum*, or the *dracontium pertuſum*, or only ſurrounded by a fillet, or ſtring. In New-Caledonia, many men had high cylindrical black caps, made of ſplit bamboos, and coco-nut-core, which gave them a martial appearance; nor had ſeveral of theſe nations forgotten to ornament their bodies, by puncturing them in various figures, and fil-

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ing the punctures with pounded coals or ſoot. But the more civi- MANNERS.
lized inhabitants of Taheitee and the Society-iſles, living in the ſame mild tropical climate, have adopted a convenient, elegant dreſs: the lower part of the body is generally wrapt in pieces of this cloth to the middle of the calf of their legs, and the upper part is covered with another piece, having a longitudinal hole cut in the middle of it, through which they thruſt their heads, and thus they cover their ſhoulders, half of their arms, their backs and breaſts: ſometimes theſe parts hang looſe, and at other times they are tied faſt to the body by the lower wrapper. This lower wrapper is likewiſe adopted by the inhabitants of the Friendly-iſlands, with the entire omiſſion of the upper-garment, which has the hole in the middle, and is called by the Taheiteans, *tèepoota*. In the Marqueſas and Eaſter-Iſland, the ſame kind of cloth is uſed by the natives, though the full dreſs ſeemed to be only a garment of ceremony, when their chiefs and women appeared in ſtate; the reſt of the nation being but indifferently covered with ſhort wrappers about the loins. Thus may we ſee the progreſs in the dreſs which originated from a neceſſary ſhelter againſt the inclemencies of the climate, and from a ſenſe of modeſty was improved to a covering equally fitted for convenience and elegance.

The inhabitants of the Society-iſles, are among all the nations of the South-Seas, the moſt cleanly; and the better ſort of them carry

MANNERS carry cleanlineſs to a very great length; they bathe every morning and evening, in a rivulet, or the ſea-water, and after they come out of the ſea, they conſtantly undergo an immerſion of their bodies in freſh water, for the ablution of the briny particles; before and after their meals they waſh their hands; and were glad to obtain from us combs of all ſizes and kinds, in order to adjuſt their hair, and likewiſe to free them from vermin, which, before the introduction of European combs, they frequently ſearched for, rendering this ſervice to one another: they likewiſe anoint their hair, with perfumed coco-nut oil, both to cauſe a fine ſmell, and to hinder the increaſe of vermin, which are inſtantly killed, as ſoon as their ſpiracula are ſtopt up with the oil. The want or ſcarcity of freſh water, in all the Low and Friendly-Iſlands, makes the natives leſs careful of ablution, and cauſes among them, I believe, theſe cutaneous and leperous diſorders, which we found ſo common among them. But the inhabitants of the New-Hebrides and New-Caledonia, we obſerved to be more cleanly, becauſe freſh water is more common, and they were likewiſe careful in deſtroying the vermin.

The inhabitants of the Friendly-Iſlands conſtantly clip the hair of their beards, by means of two ſharp bivalve ſhells; and I do not remember to have ſeen, in all theſe iſles, one ſingle man, with a long

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a long beard. * The hair of the head is commonly black, and flowing in beautiful natural ringlets; the natives, however, generally cut it ſhort; and in a few individuals only, from Bolabola, we obſerved long hair. MANNERS

Beſides theſe articles belonging to the external appearance of the nations in the South-Seas, there are many others, which are equally characteriſtic, and the *language* is none of the leaſt ſtriking, curious and intereſting. We acquired only a very imperfect knowledge of the many languages ſpoken in the various iſles of the South-Sea; we ſhall therefore not pretend to be very full upon this ſubject, nor can it be expected; we ſhall only offer on that head a few general remarks.

The LANGUAGE of the Society-iſles was better underſtood by us than any other, becauſe we had made ſo conſiderable a ſtay among them, and had an opportunity of making uſe of the vocabularies collected in former voyages, and of converſing with the natives whom we had on board; the other dialects were only imperfectly under-

* We are therefore ſorry, that we cannot, in this inſtance, ſay of the young artiſt's picture, repreſenting the landing at the Friendly-iſles, which is engraved for Capt. Cook's voyage, *omne tulit punctum qui miſcuit utile dulci*, as he made it a fine compoſition at the expence of truth, by giving all the men large buſhy beards, contrary to the *coſtume* of the country, and by cloathing many figures from head to foot, with fine flowing draperies, in the fineſt Greek ſtyle, though the natives are conſtantly naked from the girdle upwards; the elegant form of their naked bodies would have produced as fine an effect, as the drapery: and in repreſentations of this kind intended to accompany an hiſtory of a voyage, the chief requiſite and merit is *truth*; which ought not to be ſacrificed to whim and caprice.

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MANNERS understood. We found, however, that the language ſpoken at Eaſter-iſland, the Marqueſas, the Low, the Society, and Friendly-iſlands, and in New-Zeeland, is the ſame, and that the differences are hardly ſufficient to conſtitute dialects. The languages ſpoken at the New-Hebrides, New-Caledonia, and New-Holland, are abſolutely diſtinct from the above general language, and likewiſe differ among themſelves. From a compariſon of the vocabularies, in Schouten and le Maire's voyage, with one collected at the Friendly-iſlands, it appears, that they ſpeak entirely the ſame dialect, in the Friendly-iſlands, and in thoſe of *Hope*, *Coco's*, and *Traitor's*, to the North of the above iſlands. If we may be allowed to make an inference from one ſingle word, I ſhould think that at *Chicayana*, * a low iſland, four days ſail from *Taumaco*, the ſame dialect is ſpoken, ſince *ti-curi* or *tee-ghooree*, is, in both places the name for a dog; nay, even at the NEW-CAROLINE-ISLANDS, they call the plaintive ſongs of their women *tonguer ifaifil*; † and in New-Zeeland, and the Friendly-iſlands, the ſame would be expreſſed by *tanghee fefeine*, which is not ſo very different, as to diſcourage our gueſſing at the ſimilarity of both languages. The language of *Chicayana*, is likewiſe, in my opinion, nearly related to that of the Tagalas, on the iſland of Luçon, becauſe

* Dalrymple's Collection, vol. i. p. 159.

† Des Broſſes Hiſt. des Navigat. aux Terres Auſtral. vol. ii. p. 486.

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cauſe, in this tongue, *great* ſignifies DAQUILA, or TAQUILA, * MANNERS and this is the name by which the natives of *Chicayana* diſtinguiſhed the *great cardia*, or *cockles* from thoſe which are ſmaller and more common.* The language of the Tagalas having an undoubted relation to that of the Malays, as may be eaſily collected from the compariſon of the words of both languages; it can be no wonder that Malayan words were found in the Taheitean language, and its various dialects. Theſe general obſervations on the language are ſo far curious and intereſting, as theyafford a farther confirmation of the origin and migration of theſe iſlanders.

But there are other obſervations, occurring on a more minute conſideration of the language itſelf. The *firſt* is that at Taheitee, and the Society-iſles, the natives have no ſibilant in their language; and therefore having no uſe of their organs of ſpeech in forming theſe ſounds, they become at laſt utterly incapable of pronouncing any ſibilant ſound whatſoever. Their words, or even ſyllables, are never terminated by a conſonant; for which reaſon the natives, in imitating the names of Europeans, always added a vowel at the end of ſuch names as ended in a conſonant; and this likewiſe has made their language ſoft and agreeable on account of the number

* P. Juan de Noceda y el P. Pedro de San Lucar Vocabulario de la Lingua Tagala. Manila, 1754, fol.

† Dalrymple's Collection of Voyages, vol. i. p. 149.

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MANNERS of vowels; and wherever they met a ſibilant, or conſonant, which to their ear was not ſufficiently euphonic, they immediately ſubſtituted another of more eaſy pronunciation: *Cook* was changed into *Toote*, and *George* into *Teoree*. The numerous vowels require a variation of dipthongs and accents, to produce a multiplicity of ſounds, and a nicety of ear to obſerve all theſe little diſtinctions, which often occaſioned a material alteration of the ſenſe; as *ai*, to eat; *edi*, to copulate; *eìya*, fiſh; *aìya*, to ſteal or rob; *oìyo*, a noddy; *e-wài*, water; and *àwai*, the foot; *a bòwu*, a dreſs or cloth; *à boo*, a wind from behind; and *eoo*, the breaſts; a dog is called *eoree*; a nail or talon *yaree*; and the male genitals *e-oure*.

The langauge is harmonious, and by no means harſh, when ſpoken in a manly manner, at Taheitee; at Huaheine, ſeveral people had the habit of pronouncing whatever they ſpoke, in a ſinging manner; and at the Friendly-iſlands, the ſinging tone of voice, in common converſation, was ſtill more frequent, eſpecially amongſt women. The language of the Taheiteans, ſeems not deſtitute of ſome kind of culture, and ſhews a degree of civilization; for they have not only names for conſtellations, and ſingle ſtars, for every plant or graſs, but even for every inſect, for every worm, every ſhell, fiſh, and bird, haunting their iſle, and frequenting their ſhores; they have names alſo for all the parts of their body, and not only ſuch as may be ſeen, but likewiſe for ſuch as cannot be known but from diſſection.

Like

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Like the old Britons, and Northern nations, they reckon not by days, but number the nights, if they want to expreſs the interval of ſeveral days. As their minds are moſt uſed to things that ſtrike the ſenſes, they have no proper words for expreſſing abſtract ideas; thus for inſtance they call the thoughts *the words of the belly*, "*parou no-te-oboo*;"-a covetous man is called *tahata pirree-pirre*, or *piperriee*; and it ſhould ſeem they had in their minds the idea of narrowneſs, or glueing and ſticking together, when they formed the word, for *e-pirre* has the above ſignifications; a generous man is called *tàhata-oowhoroa*, or literally, *the man of gifts or preſents*; the HEAD of a human creature they call *oòpo*; that of a quadruped or fiſh, *òmee*; and that of a bird *pòa-arahoù*; the TAIL of a dog is called *àiro*; of a bird, *hòbe*; of a fiſh *eetèrre*; this laſt name is very remarkable, becauſe it is expreſſive of the uſe the fiſhes make of their tail; for *eboe-whateerra*, ſignifies a paddle for ſteering a canoe, or great boat; and the *eeterre* of fiſh, ſerves likewiſe for the direction of its courſe in the water. The males of the human ſpecies, they expreſs by the word *tàne*; and the females, by that of *vehèine*; but the males of fiſhes, birds, or any animal, are called *ònee*; and the females, *òwha*: ſo that from theſe few inſtances, we may form ſome idea of the characteriſtic points in their language. MANNERS

The COMMON OCCUPATIONS of the people of Taheitee, and the Society-iſlands, as well as thoſe in all the iſlands of the Pacific

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MANNERS Ocean are so very little varied, that Europeans, used both to a variety of occupations, and a round of amusements, would think their way of living highly insipid and uniform; they commonly rise with the sun, and as they have not a variety of garments to put on, they wrap themselves in the same clothes which served them for a cover during night, then go to the river or sea, and bathe; after which ablution each follows some occupation, either to fish at low water on the reef surrounding the island, or to dig up some ground intended for the plantation of the cloth-tree, which is commonly manured with broken shells; or to collect some bread-fruit, for making a sour paste, to be laid up for the season when none is to be had on the trees; or he climbs up to the elevated vallies between the mountains, and fetches from thence some loads of the large horse-plantanes; or he is occupied in felling large trees for making canoes or building houses; or his time is taken up in excavating a canoe, or sewing the several pieces together with cords made of coco-nut core: at other times he plants a young plantane-shoot, and surrounds it with pegs and sticks, that dogs, swine, and children, may not hurt or destroy it: the making of fish-hooks and of lines, from the filaments of a grass, or of cordage of various size and use, from coco-nut core, is another employment, or the manufacturing of a lance, a war-club, a breast-plate, a scoop for the canoe, a paddle, or some other such instrument, used in war or peace, is either his occupa-

occupation or amuſement. About noon, having waſhed his hands, MANNERS he begins his meal of bread-fruit or ſour-paſte baked by hot ſtones under ground, and has perhaps, his brother and ſon for companions, whilſt his wife and the females of the family, retire with their portion to another part of the houſe, or wait till the males have finiſhed their meal. Clear water is their common drink, and frequently even ſea-water. Another ablution of the hands concludes the dinner, and if the occupations in which he is engaged are not preſſing, he reſts on the ground in his hut, or if he be weary from conſtant hard labour, whether from a long walk, or from hard paddling, he refuſes not to refreſh his exhauſted ſpirits by a ſeaſonable ſleep during the heat of the day, and in the cool of the evening returns to his former occupations with renewed vigour, till the declining ſun bids him reſt from the toils of the day; when after another ſlight repaſt, and another ablution, he lays down on the ground on a mat, and covers himſelf with his garment, by the ſide of his wife; unleſs he finds it more neceſſary to go on the reef with lighted links, in queſt of a proviſion of fiſh.

The more barbarous, the leſs poliſhed the manners of the nation are, the more MARKS OF CRUELTY towards ſtrangers are generally obſerved; and in this reſpect, I ſhould think, the natives of the tropical iſlands ſhewed the moſt favourable ſymptoms of friendſhip and philanthropy; for as ſoon as our ſhips arrived, they were received

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MANNERS received in the moſt friendly, generous, and cordial manner: even the attack made upon Captain Wallis, I cannot ſuppoſe to have been concerted, unleſs ſome previous inſult or offence, had been given, perhaps unknowingly, by our people, which rouſed their revenge, and as they were unacquainted with the effects of our fire-arms, they thought perhaps, they might venture an attack upon a ſet of men, who had offended or inſulted them; and as the Britiſh people did not then underſtand their language, they poſſibly might have demanded redreſs and ſatisfaction for it, which, not being complied with, on account of the difference and ignorance of the language, they thought themſelves in the right to retaliate the injury upon them; though this unlucky attempt, proved fatal to many of their brethren. Wherever we came, though the inhabitants had not the leaſt idea of the execution our fire arms were capable of making, they behaved very friendly towards us: nay, after we had killed a man at the Marqueſas, grievouſly wounded one at Eaſter-iſland, hooked a third with a boat-hook at Tonga-tabu, wounded one at Namocka, another at Mallicollo, and killed another at Tanna; the ſeveral inhabitants behaved in a civil and harmleſs manner to us, though they might have taken ample revenge, by cutting off our ſtragling parties; all which, in my opinion, ſufficiently eſtabliſh the friendly diſpoſition of theſe ſeveral nations.

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We had no opportunities of seeing their method of punishing criminals, but we were told that thieves were either hanged or drowned with a weight tied to their necks; in either kind of punishment are no vestiges of cruelty. In their wars all is over after the first onset, and it does not appear that they take any prisoners of war, or if they do, that they treat them in an inhuman or barbarous manner. We found not even the vestiges of making slaves of them in the sense that Eastern nations do, or still less by employing them to hard and toilsome labour, as we were used to do with those whom we send by thousands to our colonies. All that can be said against their friendly dispositions, is contained in some relations we heard of the devastations the people of Tearraboo or the little Peninsula made on *O-Parre*, after the battle of the Isthmus: it was reported that they burnt houses and canoes, and carried off all their hogs: but even this is in my opinion, not sufficient to represent them more cruel than the civilized nations of Europe, who plunder, waste, and burn with so much eagerness, and so little concern, that if we judge from thence, the actions above mentioned, seem by no means to brand the inhabitants of the South Seas with cruelty and barbarism. The natives of Borabora had conquered *O-Raiedea* and *O-Taha*, and some of their chiefs and warriors had occupied the lands of such people as had fled the country, but except in this instance, the conquerors had left

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MANNERS left every thing in the old ſituation; even the kings or chiefs of theſe iſlands, were alive and free, had a diſtrict to govern, had honours ſhewn them, and if we except the ſupreme power, they had not much changed their ſituation for the worſe. There is hardly an inſtance of ſuch moderation to be found in Europe. They had however, it ſeems, ſome notions, that ſtrangers might be treated with leſs friendſhip and honeſty, than their countrymen, becauſe no one of them heſitated a moment to ſteal or pilfer any thing, wherever he could lay his hands upon it, though they allowed it to be wrong, and though theft was puniſhed in their country with hanging or drowning. They were, I believe, likewiſe in ſome meaſure excuſable: for why came a ſet of ſtrangers there, who had nothing to do on their ſhores? as they have no ſhipping or trade, or connexion with foreign nations, or any intercourſe, or any wants making ſuch an intercourſe neceſſary, they could not foreſee that they ſhould ever want the protection or favour of any European, and might therefore think it ſuperfluous to gain their favour by honeſty: but the generality behaved in ſo friendly a manner, as muſt endear their tempers and manners to all true lovers and promoters of univerſal philanthropy. However, though we find the iſlanders in the South Sea not without hoſpitality, they nevertheleſs think the ſtrangers not quite entitled to all the friendſhip and benevolence which they beſtow upon their own brethren,

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and in this reſpect they perfectly reſemble all iſlanders in a leſs civilized ſituation, who commonly have a ſhy, reſerved, and inhoſpitable character. Nor are the inhabitants of the iſlands in the South Sea quite free from a coarſeneſs of manners, even to indelicacy in many reſpects, eſpecially among the lower claſs of people; which appears from the diſputes of many of them, wherein they fall to beating one another with the fiſt, and pulling one another's hair: and the numerous opprobrious names of *toùna*, *veheine wha-atùree*, *àiya*, *tahata-tàïva*, *dooe-dooaï*, *tahàta-peepèe-ree* and others, corroborate this aſſertion. MANNERS

The more fertile the iſle of Taheitee is, and the more richly it affords all the neceſſaries of life, and even thoſe things which contribute to make life eaſy and comfortable, the more does it contribute to the OPULENCE of the greater part of the inhabitants; and really but very few are in ſuch a ſituation, as to be called POOR. Whenever we came to this happy iſland, we could evidently perceive the opulence and happineſs of its inhabitants; and thoſe people of other South Sea iſlands, who accidentally came to O-Taheitee always allowed it to be the richeſt land, which they had ſeen. Opulence never fails to excite the appetite for ſenſual pleaſure, and if no reſtraint is laid on its gratification, it grows ſtronger and ſtronger, ſo as at laſt to extinguiſh all the notions of propriety or decency. This has been

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MANNERS the caſe in all nations from all times. As long as the chiefs of theſe iſlanders were few, the reſt of the nation, preſerved a kind of reſpect for theſe leaders, who then it ſeems, were the heroes and beſt warriors of the nation. But opulence, the fertility of ſoil and climate, and idleneſs at laſt increaſed the race of chiefs to ſuch a degree, that the wiſe men of the nation, the great chiefs of the provinces and the whole nation itſelf, could not but be alarmed at their too great number, and the diſturbances which were doubtleſs too often made by an idle, athletic, and numerous ſet of men. The reſpect which the reſt of the nation ſtill had for their chiefs, and the great bodily ſtrength of theſe drones, whoſe force was unimpaired by labour, and daily inflamed by a preternatural indulgence in the choiceſt fruit, and the fat of the land, made it more and more difficult to quell the riots of theſe turbulent men. The married women have in all theſe iſles a great reſpect ſhewn to them, and their influence is great in all public and private affairs; and as ſoon as the heir of a family is born, the father in a certain manner loſes his importance. Theſe two circumſtances made young men of rank and property averſe to marriage; and as they felt the ſtrong calls of nature under the influence of a powerful ſun, they endeavoured to gratify their ſenſuality in ſuch a manner as was eaſy and moſt obvious; and as the other ſex was excited by the ſame cauſes to indulge themſelves

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selves in sensual pleasure, the consequence was natural, that every kind of debauchery was introduced. These scenes of lewdness nevertheless, could not be at first very common; but the children who were born in consequence of this practice, became the object of serious public consideration: they had not been born in regular marriage, nor was it always possible to point out the true father; they were therefore deprived of the right of inheritance, on account of the uncertainty of their offspring; but continued to be stiled *Arees*, and were allowed to belong to the family of chiefs, already grown too numerous, turbulent, and powerful. As these chiefs, according to a former observation, were the best warriors of the nations, the great chiefs and sage men thought it prudent to institute an order of men, who should have great prerogatives, and great honours paid to them, and who were to be the chief warriors; and that they might not be too much attached to their wives and children, they were forbid marriage; and in the beginning of the institution, they were directed to abstain from all kinds of venery, as a practice that checked the boldness of spirit, and deprived men of that bodily strength so much required in their warriors. This society is called *Arreeoy*, and is still subsisting; though somewhat altered from its primitive institution. There is no prerogative which a man likes more to boast of at the Society-islands, than MANNERS

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MANNERS that of an *Arreeoy*; * they all belong to the claſs of warriors: as ſoon as an *Arreeoy* from another country appears, he is kindly received by the firſt *Arreeoy*, whom he meets; they exchange preſents in cloth and garments, and he is entertained by his new hoſt, with all the demonſtration of friendſhip, and with the moſt unbounded hoſpitality. At certain ſtated times of the year the *Arreeoys* of one iſland remove to another, and there the days are ſpent in great feaſts, wherein a profuſion of the dainties of the country are conſumed, and the nights are ſpent in muſic and dances, which are ſaid to be remarkably laſcivious, and likewiſe in the embraces of ſome girls, who officiate on theſe occaſions like the prieſteſſes and nymphs of the Paphian and Amathuſian Goddeſs among the Greeks. We ſaw above ſeventy canoes ſailing in one day from Huaheine to Raietea, with more than ſeven hundred people of both ſexes on board, in order to aſſiſt at one of theſe feaſts; when we arrived at Raietea, we found theſe *Arreeoys* removed from the Eaſtern ſide of the iſland, where they firſt had landed to its Weſtern ſhore, and there we ſaw every houſe and ſhed crowded with people, and in every large houſe we obſerved heaps of proviſions piled up, which were preparing by their women; and fiſhes, fowls, hogs, and dogs, were likewiſe dreſſed on this ſolemn

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* See George Forſter's Voyage round the World, vol. ii. p. 130.

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ſolemn occaſion. During the night we could ſee theſe houſes illuminated, and frequently heard the ſound of their drums, which are uſed at their dramatic dances. And in a few days afterwards they removed to *O-Tahà*, and we were told, that they would even go as far as *Bora-bora*, before they would think of returning. So that ſeveral weeks muſt be ſpent in theſe feaſts of *Arreeoys*. It is impoſſible that the frequent cohabitation with women, ſhould not now and then be productive of an offſpring; nay ſome of the modern *Arreeoys*, are ſo far degenerated, that they regularly keep a miſtreſs, which, to all intents and purpoſes, is ſimilar to a temporary wife, ſuch as Muhammedans are uſed to marry for a certain time only.* But as this cuſtom was contrary to the ſpirit of the original inſtitution of Arreeoys, the Sages of the nation made another law, according to which, all infants, the offſpring of the connexion of the Arreeoys with women, ſhould be inſtantly killed after their birth; becauſe, the increaſe of the Arees was thought to be detrimental to the ſtate, and the original engagements of the *Arreeoys*, never to cohabit with women, would elſe have been entirely defeated. *Boba*, the chief of O-Taha, was an Arreeoy, and nevertheleſs kept *Teinamai*, as a miſtreſs, who was with child by him, at our ſecond return to the Society-iſlands, and told

MANNERS

* Chardin Voyage, vol. ii. p. 261, 263, de l'edit. in 12mo. de 1711. Amſter.

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MANNERS told us the child would be ſtifled the moment it was brought forth. Regulation and cuſtom have eſtabliſhed this inhuman practice; and nations which are not yet acquainted with thoſe refined and ſublime principles of virtue, which are eſtabliſhed by the introduction of chriſtianity into Europe, have frequently ſacrificed the obſervation of a moral or ſocial virtue to the greater ſecurity of the ſtate, and even to a device for preventing imaginary evils; nay, which is worſe, to a method of promoting either a martial ſpirit, or for teaching the ſtratagems of war. Thus for inſtance, the Spartans now and then ſent their youths out upon the buſineſs of killing their Helotes; or ordered them to ſteal. However, we found theſe inhuman practices to be the effects of OPULENCE, LUXURY and SENSUALITY in a nation, which upon the whole, is not deſtitute of humanity, but rather inclined to practice kindneſs and goodnature, in a manner which would do honour to a more enlightened and civilized race of men.

The great profuſion, and variety of choice fruit, delicious fiſh, and fine pork and dogs fleſh, has likewiſe occaſioned in the idle men belonging to the race of arees, a propenſity to indulge themſelves in the pleaſures of the table beyond what is uſual. To excite their gluttony and voraciouſneſs, they have invented the art of dreſſing theſe ſimple gifts of providence in a variety of diſhes, nay, ſome ſauces have been found out for ſtimulating appetite,

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and making ſome of the inſipid victuals more palatable, and the quantities of the various kinds of fruit and meat which theſe drones can habitually ſwallow are hardly credible. Nor have they omitted to deviſe a method for procuring intoxication by the juice and infuſion of a kind of pepper-root. This ſame opulence has likewiſe been productive of diſtinctions in dreſs and ornaments. Their better people wear a variety of cloth diſtinct in colour and quality, and uſe it perhaps during a few days only, when they immediately change it. The fine white, and very ſoft cloth is the dreſs of their chiefs, and their women have a kind of wrapper or petticoat of a thin dark brown cloth, which is perfumed with their odoriferous coco-nut-oil. Red and yellow cloth of a very ſoft texture, is likewiſe part of the dreſs of the people of quality. Beſides the diſtinction in dreſs, the chiefs are always ſerved and attended by ſome of the loweſt claſs of people, who dreſs and prepare their victuals, fetch water, and even cram them like animals that are to be fattened, and do all kind of ſervice for them; while they indulge themſelves in ſloth and idleneſs, bathe twice a day, repoſe on a matt, with a wooden ſmall chair under the head inſtead of a pillow; and do no kind of work unleſs they walk to ſee a friend or relation, nor are they unlike our grandees, who, from mere opulence, plunge into luxury and ſenſuality, and purſue the gratification of their brutiſh appetites, with the greateſt MANNERS

eagerneſs,

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MANNERS eagerneſs, making it a kind of occupation neceſſary for their exiſtence; they like them roam over the fertile plains of their iſle, in queſt of youth and beauty, and employ all the arts and guiles known in civilized countries, in order to debauch the unwary young females. When we ſailed from O-TAHEITEE to HUAHEINE and RAIETEA in the year 1774, a female of the laſt mentioned iſland embarked with us at Taheitee in order to return to her native iſland. When we approached Raietea, ſhe became very apprehenſive, and told me ſhe expected to be beaten by her father and mother, having been very naughty, and run away from them about a year and a half before, with a young *Arreeoy* of the family of the chiefs, who afterwards neglected her: * ſhe was at Taheitee in the family of Tootaha's mother, and got her livelihood by working at the manufactory of the Taheitean cloth, and at the ſame time ſerved for the gratification of the young men; in which profeſſion ſhe likewiſe attended our ſhip; and having on her return made her peace with her parents, ſhe took a trip to O-TAHA, when the Arreoys removed to that iſland;

* Capt. Cook ſeems to have expreſſed himſelf in ſuch a manner, that his readers muſt underſtand that this girl was a native of O-Taheitee, and had run away from her parents in our ſhip; which could not be the caſe, ſince both her parents lived at Raietea; and though the circumſtance happened as I related, it is equally probable, that her countrymen aimed a ſtroke of ſatire at her for running away with an arreeoy. See Cook's Voyage, p. 356.

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island; but returned again in a few days to Raietea: which instance, MANNERS in my opinion, clearly proves that *luxury* and *sensuality* naturally lead men to the most irregular and violent desires of gratifying their sensual appetites, ruining innocent young women, and of destroying the peace and happiness of families.

Among the innocent and harmless indulgences may be reckoned, the common practice of these islanders to rub and chafe the wearied limbs of persons who have walked much, or used some violent exercise. This gentle chafing and pressing hinders the heated limbs from growing suddenly cold, and becoming stiff from a too sudden transition from one extreme to the other; and, as in these exertions, commonly a few muscles have been too much employed, and others less, it cannot but happen, that the equilibrium must be lost between the parts too much strained, and those which are so very little employed, which might cause dangerous effects, by cramps, convulsions, and other symptoms. The operation likewise invigorates the whole frame, and refreshes so much, that in the beginning I could not persuade myself, that this gentle squeezing of the tired limbs should produce so salutary an effect, had I not frequently had the experience *. When we had walked a great deal in our excursions,

* The Chinese are equally fond of the same operation. See *Osbeck's Voyage*, vol. I. p. 231. Nor is it unknown, that the oriental nations use this rubbing or chafing in their public baths; which is said sometimes to cause so exquisitely agreeable a sensation, that the operated person is very nearly intranced. Mr. Lockyer, purser of the Ceres East-Indiaman, communicated this circumstance to me.

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ſions, and ſat down in order to take ſome refreſhments, the natives of Taheitee and the Society Iſlands never omitted to rub our feet and arms, and to add this to the many little acts of kindneſs and hoſpitality, which they beſtowed upon us with the greateſt readineſs and chearfulneſs; as they themſelves never failed to perform this ſervice to one another, on ſimilar occaſions.

The rank aſſigned to WOMEN in domeſtic ſociety, among the various nations, has ſo great an influence upon their civilization and morality, that I cannot leave this ſubject, without adding a few remarks. The more debaſed the ſituation of a nation is, and of courſe the more remote from civilization, the more harſhly we found the women treated. In TIERRA DEL FUEGO women pick the muſcles from the rocks, which conſtitute their chief food. In NEW-ZEELAND, they collect the eatable fern-roots (*Pteris eſculenta, Polypodium medullare,*) they dreſs the victuals, prepare the flax-plant, and manufacture it into garments, knit the nets for their fiſhing, and are never without labour and employment, whilſt the ſurly men paſs the greater part of their time in ſloth and indolence: however, theſe are the leaſt hardſhips of theſe unhappy females; for they are not only the drudges of the men, but are not even permitted to puniſh their unruly and wanton boys, who often throw ſtones at their mothers, or beat them with impunity, under the eyes and ſanction of their fathers; and they are looked upon as beings calcu-

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lated for the mere ſatisfaction of brutal appetites, nor treated better than beaſts of burden, without being allowed to have the leaſt will of their own: which inconteſtibly proves, how much men, in a degenerated and ſavage ſtate, are inclined to oppreſs the weaker party. MANNERS

Et Venus in ſylvis jungebat corpora amantum,
Conciliabat enim vel mutua quemque cupido,
Vel violenta viri vis, atque impenſa libido.
LUCRET. lib. v.

The females at TANNA, MALLICOLLO, and NEW-CALEDONIA, were not in a much happier condition; for, though we never knew them to be beaten and abuſed by their own offspring, they were however obliged to carry burdens, and to take upon themſelves every laborious and toilſome part of domeſtic buſineſs. This unhappy ſituation of the females among the ſavage and barbarous tribes of the South-Sea, has nevertheleſs been productive of an advantage, which, in our opinion, ſhould rate them above their ſurly lords or oppreſſors; for, though the conſtant acts of indelicacy, oppreſſion, and inhumanity, are ſo far from contributing towards the real contentment of the females, that they on the contrary reduce them to the moſt wretched beings; yet this very oppreſſion, and the more delicate frame of their bodies, together with the finer and more irritable texture of their nerves, have contributed more towards the

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MANNERS improvement and perfection of their intellectual faculties, than of those of the males. The various objects surrounding them make quicker and more vivid impressions on the senses of the females, because their nerves are finer and more irritable; this makes them more inclined to imitation, and more quick in observing the properties and relations of things; their memory is more faithful in retaining them; and their faculties thereby become more capable of comparing them, and of abstracting general ideas from their perceptions. This facilitates to them the various operations of their toilsome, laborious life, and often leads them towards new improvements. Used implicitly to submit to the will of their males, they have been early taught to suppress the slights of passion; cooler reflexion, gentleness, and every method for obtaining the approbation, and for winning the good-will of others have taken their place, and must in time naturally contribute to soften that harshness of manners, which is become habitual in the barbarous races of men; and all this may perhaps prepare them for the first dawnings of civilization. The males in barbarous nations look upon the women as their property, and this went so far, that in New-Zeeland the fathers and nearest relations were used to sell the favours of their females to those of our ship's company, who were irresistibly attracted by their charms; and often were these victims of brutality dragged by the fathers into the dark recesses of the ship, and there left to the

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beastly appetite of their paramours, who did not disdain them, though the poor victim stood trembling before them, and was dissolved in a flood of tears. The barbarian knows hardly any law; the superiority of power decides every thing; it is therefore no wonder that he should extend his tyrannical sway over the weaker sex, and being himself a stranger to the more *tender feelings of love*, he is of course equally ignorant of the ideas of *modesty*, *bashfulness*, or *delicacy*; and if he forbids to his wife the connexions with others, and punishes the transgression of his commands on that head with great severity; it is not from the above principles, but in order to assert his right of property and dominion over her; for he would freely admit any stranger to his wife's embraces, if the equivalent for it were to his liking, or if prompted by some other consideration, which could satisfy his caprice or whim. MANNERS

In O-Taheitee, the Society, the Friendly Isles, and the Marquesas, the fair sex is already raised to a greater equality with the men; and if, from no other reason, from this alone we might be allowed to pronounce, that these islanders have emerged from the state of savages, and ought to be ranked one remove above barbarians. For the more the women are esteemed in a nation, and enjoy an equality of rights with the men, the more it appears that the original harshness of manners is softened, the more the people are capable of tender feelings, mutual attachment, and social virtues, which naturally

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MANNERS rally lead them towards the bleſſings of civilization. In O-Taheitee, and its neighbourhood, the women are poſſeſſed of a delicate organization, a ſprightly turn of mind, a lively, fanciful imagination, a wonderful quickneſs of parts and ſenſibility, a ſweetneſs of temper, and a deſire to pleaſe; all which, when found connected with primitive ſimplicity of manners, when accompanied with a charming frankneſs, a beautifully proportioned ſhape, an irreſiſtible ſmile, and eyes full of ſweetneſs and ſparkling with fire, contribute to captivate the hearts of their men, and to ſecure to them a juſt and moderate influence in domeſtic and even public affairs. We find the women eſteemed at O-Taheitee, and its neighbourhood; they mix in all ſocieties, and are allowed to converſe freely with every body without reſtriction, which enables them to cultivate their minds, and to acquire that poliſh, which afterwards contributes to improve the manners of their young men; for, as it is one of the chief points of female education, in theſe happy iſles, to learn the great art to pleaſe, they are inſtructed in all the means of gaining the affection of the males, of ſtudying every winning art, and of habituating themſelves to that ſweetneſs of temper which never fails to merit the return of attachment, of friendſhip and love. Their frequent ſongs, their dances, their innocent laughter, and humorous mirth, all conſpire to make the moſt laſting impreſſions upon the youths of the other ſex, and to cement an union which is diſſolved only by death.

Fuit

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Fuit hæc ſapientia quondam MANNERS

Concubitu prohibere vago: dare jura maritis.

HORAT. ART. POET.

But it is remarkable, that though the female ſex has already ſo much ſoftened the manners of their countrymen, there ſtill remain ſome ſtrokes in their cuſtoms, which ſeem to prove, that the fair ſex did not always enjoy that eſteem and equality, which is now allotted to them. Wherever women in a nation are conſidered as the drudges of the family, there they muſt be contented to take their victuals ſeparately from their ſurly lords and huſbands *. This inequitable cuſtom, however, is univerſally received at Taheitee and its neighbourhood, and I was utterly unable to learn from them the true origin or cauſe of it; and in my opinion it is no more than a remainder of that ſubjection in which women formerly were held in the Society-Iſles, before they came to their preſent improved condition.

The ſtate of MARRIAGE ought likewiſe to engage our attention, as we are here treating of women. As far as we could obſerve, *mono-*

* *Labat* obſerved, that a negro-ſlave did not eat with his wife and children; but after he was ſatisfied, he gave them leave to eat likewiſe; and *Valentyn* found the women in Amboyna ſerving their huſbands at table, and eating afterwards in private. The Guiana-men exclude their women from their meals, and in the Caribbee Iſlands women are not even permitted to eat in preſence of their huſbands. *Labat Voyage en Amerique.*

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MANNERS *monogamy* was moſt univerſally introduced among the various nations of the South-Sea. There were, I believe, inſtances, eſpecially among the people of quality, that a man endeavoured to have a love-affair with ſome of the many females, who were always ready to gratify ſuch votaries on the firſt application; but I never heard, that a married woman ever yielded to the embraces of any lover. As polygamy is ſo very common in all hot climates, and likewiſe among all barbarous nations, where women are looked upon as private property; it might appear very remarkable, that in the iſles of the South-Sea, lying in a hot climate, where luxury had made a conſiderable progreſs, and where the inhabitants were remarkably addicted to venery; or at New-Zeeland, and in the more Weſtern iſles, where women were leſs eſteemed, polygamy ſhould not have been introduced. The reaſons of this extraordinary phænomenon are in my opinion to be looked for, firſt, in the more gentle and ſweet manners of their females; ſecondly, in the equal proportion of females to males exiſting in theſe iſles; and laſtly, in the great facility of parting with a wife, and taking another in her ſtead, of which we had ſeveral examples. *O-Amo*, the huſband of *O-Poored*, had another wife when we came to O-Taheitee; nor was ſhe without a perſon who acted the part of a huſband. *Potatou* had taken *Waineeòu*, and parted with his wife *Polatebera*, who lived with *Maheine* a young Oraieda Chief. But I find myſelf obliged here

to

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to confeſs, that I am not as yet perſuaded of the great and univerſal argument for monogamy, viz. the equal proportion of women to men; as, in my opinion, it is not clearly proved, that this juſt proportion takes place in all countries and climates. On the contrary, I am of opinion, that in Africa the conſtitution of food and climate, and the prevailing cuſtom of marrying many wives, have, by length of time, produced a conſiderable diſparity between the numbers of men and women, ſo that now to one man ſeveral women are born. In all kinds of animals, it has been obſerved, that in the two ſexes when coupled, the moſt vigorous and hotteſt conſtitution always prevails; ſo that if, for inſtance, the ſtallion be more hot and vigorous than the mares, and not impaired by age and too often repeated covering, the male foals in general will be more numerous; but if, on the contrary, the mares are more vigorous, the ſtallion old and exhauſted by many copulations, their offſpring will chiefly conſiſt of females. If this be applied to the inhabitants of Africa, it is evident, that the men there, accuſtomed to polygamy, are enervated by the uſe of ſo many women, and therefore leſs vigorous; the women, on the contrary, are of a hotter conſtitution, not only on account of their more irritable nerves, more ſenſible organization, and more lively fancy; but likewiſe becauſe they are deprived in their matrimony of that ſhare of phyſical love, which in a monogamous condition would all be theirs; and thus, for the above rea- MANNERS.

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MANNERS. ſons, the generality of children are born females. This obſervation is really confirmed by fact; for all the voyagers unanimouſly agree, that among all the African nations *polygyny* is cuſtomary *; nor has any one obſerved, that there are many men among theſe nations without wives †, for every one is matched to one or more females. When a polygamous nation lives in the neighbourhood of monogamous nations, there is always a probability, that the women neceſſary for ſo many men, who have more than one wife, are obtained by ſtealth, by force, or by commerce from the neighbouring nations: but in Africa all the nations are polygamous, every man is married, and has more than one wife; he cannot procure theſe numerous wives from the neighbouring tribes, where the ſame cuſtom prevails; it is therefore, in my opinion, a clear and ſettled point, that the women born among theſe nations muſt be more numerous than the males.

Though

* *Oldendorp*, (in his *Hiſtory of the Miſſion of the Moravian Brethren in the Caribbee Iſles, St. Thomas, St. Croix, and St. John.* Barby, 1777. 8vo.) ſays, vol. I. p. 293, "Polygamy is "introduced among all the tribes of African negroes; thoſe of Congo only, who are acquainted with the Chriſtian doctrines and are baptized, are monogamous." But *Lord Kaime*, in his *Sketches of the Hiſtory of Man*, vol. I. p. 197, ſays, "Among the Chriſtians of "Congo, polygamy is in uſe as formerly when they were pagans. To be confined to one "wife during life, is held by the moſt zealous Chriſtians there, to be altogether irrational: "rather than be ſo confined, they would renounce Chriſtianity."

† Boſman's Deſcription of the Coaſt of Guinea, p. 180; who likewiſe p. 181, expreſsly declares, that "the number of women much exceeds that of the men."

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Though the coloniſts ſettled at the Cape of Good Hope are monogamous, I obſerved in the various families of the town and country the number of females to prevail. The climate and food might influence them in ſome meaſure; but the chief reaſon which may be aſſigned for this appearance, is the licentious conduct of the young people there. The numerous female ſlaves imported from Madagaſcar, Bengal, Java, the Moluccas, and the coaſt of Papuas, give their young men many opportunities, and ſo great a facility of forming early and irregular connexions with theſe laſcivious females, by which the vigour, and ſtrength of conſtitution is exhauſted in their males before marriage; that it is no wonder that the young women of the colony, born under a genial ſun, never ſtinted for food, nor ſpent by labour, are more hale, vigorous, and bleſſed with a warm conſtitution; and that they during marriage, bring forth more females than males. It has been obſerved that in Sweden more females than males have been born during the latter part of this century. And it is reported that in the kingdom of Bantam * even ten women are born for one man. I wiſh therefore, that what I have here obſerved, may not be conſidered as a decided fact, but rather as reaſons for doubting and continuing the enquiry with greater accuracy; as ſuch a hint

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* Lord Kaime's Sketches of the Hiſtory of Man, vol. i. p. 176.

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MANNERS may lead to more authenticated facts, and ſerve to illuſtrate this curious part of the hiſtory of mankind. In the greater part of Europe it has been proved by the moſt accurate liſts of mortality, that the proportion of men to women is nearly equal, or if any difference takes place the males born are more numerous, in the proportion of 105 to 100; here no doubt, providence has enforced the neceſſity of monogamy: how far the argument holds in hot countries, in Aſia and Africa, is ſtill uncertain. Perhaps the vicious habit of polygamy, has in a long ſucceſſion of time inverted or viciated the general rule of nature, by the gradual enervation and encreaſing weakneſs of males. Thus we find *polygyny* in one part of the globe, *monogamy* in another, and we have reaſon to ſuſpect that *polyandry* is actually eſtabliſhed at Eaſter-Iſland. In remote ages the Median women are ſaid to have had ſeveral huſbands at a time, and thoſe were thought ill provided, who were wedded to no more than five.* Nay, among the antient Britons ten or a dozen men kept but one woman.† The women of quality on the coaſt of Malabar are allowed to marry as many men as they pleaſe.‡ And lately it has been confirmed that in the kingdom of Tibet, ſeveral men, eſpecially if they happen

* Strabo Geogr. lib. xi. p. m. 362.

† Cæſar de bello Gallico, lib. v.

‡ Dellon's Voyage, part i. chap. xxxii.

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happen to be brethren or relations, join together in maintaining one woman, and they uſed to excuſe themſelves that they had not women enough. Strange and unnatural as this cuſtom may appear, it is however, not leſs true, and owes its origin undoubtedly to peculiar cauſes. In the vicinity of China, Bukaria, and India, where men are uſed to marry more than one wife, women muſt naturally grow ſcarce, being taken by main force or addreſs, or by commerce: it is no wonder therefore that ſeveral men are obliged to maintain but one wife. Eaſter-iſland, when it was diſcovered in 1722, by *Roggewein* contained many thouſands of inhabitants.* The Spaniards found in 1770 about 3000 people on it, † and we in 1774, ſcarcely 900. ‡ This gradual diminution of inhabitants is a ſingular appearance; but what is ſtill more remarkable, is, that among theſe 900 there were but about 50 women in all: ſo that the number of men to that of women was as

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* Mr. Dalrymple's Collection of Voyages, vol. ii. p. 91, and 112.

† See Mr. Dalrymple's Letter to Dr. Hawkeſworth, London, 4to 1773, page 34.

‡ Captain Cook's Voyage towards the South Pole, and round the World, vol. 1, p. 289. It is ſaid, "The inhabitants of this iſland do not ſeem to exceed ſix or ſeven hundred "ſouls, and above two thirds of thoſe we ſaw, were males." The diſproportion between men and women is undoubtedly greater. Capt. Cook was ſickly, and did not join the expedition over the iſland, being too weak. I am certain their houſes contained no women concealed: and am equally ſure that all the women I ſaw, did not exceed fifty; nor is it probable that they had reſtrained their females from appearing during our ſtay, as they were by no means of a jealous diſpoſition.

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MANNERS 17 to one in this isle. This strange proportion of men to women, could not have taken place long before our arrival there; for in a few years the number of men would by death come to a par, or nearly so, with that of the women. I suppose therefore, that as this isle has the strongest marks of having been once subject to a violent change from a subterraneous fire and earthquake, it is highly probably that in a great revolution of this kind, the numerous inhabitants of the isle were destroyed. Nor is this circumstance very improbable, for Capt. *Davis* in the year 1687, felt a violent shock of an earthquake in this ocean, and not very far from this island. In Otaheitee earthquakes are known and are thought to be under the regulation and conduct of *Maoowe* a peculiar divinity: but this is rendered more probable from the practice of the inhabitants of Easter-island, who to this very day, frequently form their habitations under ground, and support the whole fabric by walls of lose stones. Now if the disaster befel the nation in the day time, it is probable that a great many men being out of doors upon some business, might be preserved, whereas the women keeping more at home, were involved in instantaneous ruin, by the tumbling of the wretched habitations, and no more than a few only that happened to be out of doors were spared, to become the mothers of a future and unhappy generation. These women we found still living in these huts, and they were most probably en-

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joyed by many husbands, nor were they afraid of encountering the embraces of a multitude from our ship, being accustomed to these rites on account of the reduced numbers of their sex, who were scarcely able to satisfy the desires of so many. If the above mentioned theory were admissible, and could be confirmed by facts and experience, the far greater proportion of boys, should be born in this isle: but the too numerous embraces of many might perhaps serve to frustrate the procreation of children, as is commonly the case with those unhappy females, who prostitute themselves to a multitude. MANNERS

These few remarks are offered in hopes of conveying some ideas of the different manners and customs adopted among the various nations of the South Sea, in regard to their women in general, and during marriage in particular. They lead the thinking mind towards the investigation of truth, and the wise dispensations of providence relative to the generation of man; we observe, that though in a higher refined, more civilized, and more moral nation, *monogamy* seems to be the true and best means for perpetuating and encreasing mankind; yet when man is degenerated and debased by vicious habits, or involved in great misfortunes, we find *polygyny* and *polyandry* likewise employed, though I humbly presume they may be allowed, as matters now stand. But in case wise legislators had any authority, they could not better employ it, than

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MANNERS than by perſuading theſe nations to return to MONOGAMY the primitive method ordained by providence for the propagation of mankind; and every encouragement ought to be given to ſo laudable a purpoſe.

The nations of the South Sea living all in monogamy, though deſcended from the nations on the Indian continent, who almoſt all are polygamous, prove indiſputably, that perhaps neither wiſdom nor virtue prompted them to adopt this meaſure, but that in all probability the firſt ſettlers in theſe iſles brought an equal proportion of men and women with them, and that accident made it neceſſary to continue the meaſure, and to lay aſide polygamy, the practice of which they had been accuſtomed to in the mother country. The moderate ſize of theſe iſles made it likewiſe neceſſary to continue this method; becauſe if in a ſmall iſle, one man ſhould encroach upon the rights of ſeveral men, by taking thoſe females to himſelf, which originally were deſigned to be the wives of ſeveral, he could not remain unnoticed, and the injury done could not but be felt very grievouſly, and at length be in ſome meaſure repaired by reſtoring to every individual, what ſhould have been his allotted ſhare.

The young females of O-Taheitee and its neighbourhood, are not over ſcrupulous in admitting ſome lovers to their embraces before marriage. In other countries this would be a ſufficient

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reaſon for excluding them for ever from the married ſtate; but theſe nations think of ſuch favours in a different light. If the birth of a child ſhould happen to be the conſequence, the youth is reputed the father, and the parents are entitled to all the privileges of regular marriages; if they have no iſſue, the female is not ſtamped with ignominy for ſuch a treſpaſs, but is always reputed capable of joining in matrimony with the beſt men of the nation. MANNERS.

- - - - - - *Jam proterva*
Fronte petet Lalage maritum
Dilecta Horat. l. ii. ode 5.

After marriage theſe very perſons keep their compact with a chaſtity and fidelity which are highly meritorious.

When we were the ſecond time at *O-Raiedea*, the chief of *O-Tahà*, called *Bobà*, came frequently to viſit us; one day being on board, he ſaw his ſiſters coming towards the ſhip in a canoe, and pointing to his younger ſiſter, deſired me as ſoon as ſhe came on deck, to ſay to her, *Veheina-poowa*; I did ſo, not knowing what would be the conſequence, and her elder ſiſter immediately lifted up the garments of the younger, ſhewing that ſhe had the marks of puberty. When ſhe had done this two or three times, ſhe refuſed to go through the ſame ceremony again. I then enquired more carefully into the meaning of this tranſaction, and learnt, that in theſe iſles, it is a kind of reproach, or want of dignity not to be of age, and to be

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 deſtitute of the marks of puberty. As ſoon as they appear, the young women are obliged to undergo a very painful operation, viz. to have large arched ſtripes punctured on their buttocks: theſe curious marks are reputed honourable, and it is thought a mark of pre-eminence to be capable of bearing children. If therefore a man ſhould reproach the perſon with the deficiency of theſe marks, ſhe cannot in honour avoid refuting it by ocular demonſtration. * The origin of theſe ſtrange cuſtoms, it was not in my power to inveſtigate. I contented myſelf therefore with collecting and recording the fact.

* Among the Thracians it was cuſtomary not to watch the chaſtity of their virgins, who were at liberty to admit any man they choſe to their embraces; but they kept a ſtrict watch over the conduct of their wives, whom they bought at a great price from their parents. To be punctured they thought a mark of nobility, to have no punctures, that of being baſely born. *Herodotus, lib. v. c.* 6.

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SECTION VII.

Instruction, Private and Public. Origin and Progress of Manufactures, Arts and Sciences.

Usus, & impigræ simul experientia mentis
Paulatim docuit pedetentim progredientis.

Lucretius, lib. v. p. 14, 51, 52.

ARTS AND SCIENCES

HAVING endeavoured to display the principles of morality adopted among the nations of the South Sea, together with the characteristic lines, forming their manners, and the progress they had made in refinement and luxury; I lastly annexed some cursory remarks on their women. These several particulars, together with the observations on the population, the physical constitution of the tribes found by us in the South Sea, the causes of their diversity, the origin of their races, the first state of rude

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societies and their various progress, their laws of government, would be sufficient to enable us to form a competent idea of the real state of humanity in these countries. It remains only to complete the whole, by suggesting those arts, those ideas and principles, which these nations think most worthy of perpetuating among their progeny, and which therefore become the objects both of common and more exalted education.

Our trades and mechanical arts, as well as our sciences and historical knowledge, are the results of the inventions and observations of many thousands, who have lived at many different periods of time, and in countries very remote from one another. They may be justly considered as the joint-stock of knowledge of all mankind, and a treasure, to which, all inquisitive individuals, and the more polished nations of Europe have free access. This immense store of knowledge can at present no longer be viewed and examined by one person: it is too vast to be comprehended by one individual, be he ever so great a genius. It is enough in the present condition of highly civilized European societies, to perpetuate the bulk, by dividing it into various branches, open for the exercise and investigation of a multitude, and their various circumstances and choice. Thus we have contrived not only to preserve each small branch in that perfection in which it is found, but likewise to make new improvements, and to add to it new discoveries.

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discoveries. Our art of writing and printing, is the most efficacious means of preventing the entire oblivion of many useful observations, experiments, and discoveries, in each branch of human knowledge. But had mankind lived dispersed in the woods like savages or hunters, or had they continually rambled over great spaces with their herds, it would have been equally impossible to lay up so valuable and so immense a treasure, to increase it so constantly, and to make the advantages arising from their use so easy, and so common to every individual. The cultivation of such vegetables as serve for food to mankind, enables us in an especial manner, to form numerous societies. Many trades and mechanical arts, want the joint efforts of many arms, to give them that perfection, of which they are capable; and the more each art and trade is subdivided into smaller branches, the greater is the probability of bringing it to perfection and maturity. It is therefore evident that no other than numerous societies, in countries rich in such productions as are necessary for food and raiment, are best calculated for the greatest improvements, and most likely to promote the progress of arts and sciences, and their various branches. Egypt, on account of its happy constitution, caused by the *Nile's* overflowing every year the flat country, became very early the seat of agriculture, and cultivation of all kinds of vegetables, and for that reason pastoral life was laid aside, and even

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even abhorred; population increaſed prodigiouſly, and the mechanical arts, the various branches of trade, and ſcience began to be cultivated, received daily improvements, and the whole circle of human knowledge was more and more enlarged. The countries ſituated near the mouth of the rivers *Tigris* and *Euphrates*, were much of the ſame nature with Egypt; and it was there likewiſe, that agriculture, and the cultivation of trades, arts and ſciences were known at a time when the reſt of the world was ſtill buried in barbariſm. We find the ſame climate, the ſame conſtitution of the country, the ſame early uſe of agriculture, and the ſame progreſs in trade, arts and ſciences, on the banks of the *Sind* and *Ganges* in India, and of the *Hoan-ho* and *Yan-tſe-kian* in China. After theſe inſtances, the fact may be ſuppoſed ſo well eſtabliſhed, that no doubt can remain about the truth of it. And in a certain degree may we likewiſe account for the progreſs which the arts had made in the Friendly and the Society-iſles: theſe have a conſiderable population, which I ſuppoſe, at firſt obliged the inhabitants to increaſe the native productions of their lands, by a careful cultivation; the mildneſs of the climate, the great fertility of their ſoil, the progreſs they made in agriculture, enabled them to enjoy the advantages of mutual aſſiſtance, and to reliſh the charms of ſociety; all theſe concurring circumſtances gave riſe to the firſt notion

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of perpetuating among their progeny, thoſe arts, ideas, and principles, which form their ſyſtem of education. ARTS AND SCIENCES

Though the more Weſtern iſles have the ſame advantage of a happy climate, are far from being barren, and the numbers of the people by no means inconſiderable; yet are they leſs improved, have fewer arts and improvements, and very imperfect ideas of ſcience and uſeful knowledge; which remarkable difference ſeems ſtrongly to prove, that there is ſtill another great cauſe of the advancement of human knowledge in the Friendly and Society iſles, but particularly in the latter; we have already pointed out the ſource of this difference, (chap. iv. page 295—300) viz. that the tribes from whom the two races of men in the South Seas deſcend, had unequally preſerved by education and inſtruction, the ſyſtems of knowledge, which they had obtained from their more remote progenitors: it is therefore only neceſſary to give a more detailed idea of the education of theſe nations.

The firſt notions neceſſary for the way of life now in uſe in theſe iſlands, are inſtilled into the tender minds of the children by their parents: theſe notions may be divided into various branches, as varied as the objects are to which they relate; the more univerſally neceſſary objects of all nations, are food, raiment, and ſhelter againſt the inclemencies of the weather; the operations therefore relative to food, dreſs, and habitation are the firſt, which are taught

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the children by their parents. As theſe nations have not yet a multiplicity of artificial wants, and as their time is not yet taken up with any buſineſs more material than the three enumerated articles, their manufactures are in conſequence very ſimple, and undivided in many branches; nay, they are all thought neceſſary for every individual in theſe iſles, and for that reaſon every child is inſtructed in the beſt methods of cultivating the bread-fruit tree, the plantane-ſtalks, the roots of yams, and other eatable roots; the moſt expeditious ways for catching fiſh, the proper ſeaſon and bait for each kind, and the places which they haunt and reſort to, are told to their children; nay, all the fiſhes, ſhells, and blubbers, which in any ways may with ſafety be eaten, are named and ſhewed to them, together with their nature, food, haunts, and qualities; the devices for catching birds, for rearing dogs, ſwine, and fowls, and all the names of ſpontaneous eatable plants are communicated to their youths, together with their ſeaſons and qualities; ſo that there is hardly a boy of 10 or 12 years old, who is not perfectly well acquainted with theſe articles. But as the bark of the mulberry tree, requiſite for raiment, muſt be cultivated with a great deal of care and application, their youths are well inſtructed in the methods neceſſary for that purpoſe: and every young woman is early inſtructed in all the operations requiſite for manufacturing and dying their cloth, and likewiſe in thoſe of making mats, and other parts of their dreſs.

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The wood which is beſt calculated for building a houſe, a canoe, or other utenſils, together with every operation for erecting a habitation, for making the various parts of a boat, and for navigating it by paddles or ſails, are underſtood by every perſon, from the laſt toutou to the firſt chief of the land. In ſhort, there is not one mechanical operation, which they do not teach to every youth, and which, after ſome time, he is not capable of executing with as much adroitneſs and ſkill as the beſt and oldeſt man in the nation. ARTS AND SCIENCES

It might ſeem that after all, theſe are but trifles in a ſyſtem of education; but the very exiſtence of theſe iſlanders depends upon the knowledge they have of the various vegetables, their cultivation and preparation into food, &c. &c. and alſo of the birds, fiſhes, ſhells, &c. which make part of their food. I had occaſion to write down the names of 48 fiſhes, which they all reckoned eatable; and Captain Cook declared, thoſe he had ſeen in his firſt voyage, and of which they heard the names from the natives were about 150. The very bread-fruit, *(artocarpus communis)* called by the natives *ooroo*, has three varieties diſtinguiſhed by peculiar names: thus for inſtance, the variety with more narrow pinnatifid leaves and oblong fruit, is called *maira*; another variety with oblong fruit, but a more rough, and as it were, ſcaly outſide, they name *epatèa*; and ſtill another oblong variety, whoſe rind has ſmall mammillary

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prickles or warts, bears the denomination of *tattàra*. Of the banana (*muſa paradiſiaca*) they enumerate at leaſt 13 different ſorts, diſtinguiſhed by different names, beſides the large horſe-plantanes: they cultivate at leaſt two ſorts of *arum*, viz. the common eddoes, with a blueiſh velvet leaf, (*arum eſculentum*) called *tarro*, and the large kind, with green gloſſy leaves, which they name *àpe*, (*arum macrorhizum*) Beſides theſe varieties of plants, they have alſo a kind of excellent apples, called *evèe*, nearly related to the Braſilian plumb (*ſpondias.*) A large tree bears a kind of fruit involved in a ſtringy ſhell, in taſte not greatly different from the cheſnut, which they name *ràtta*, and we gave it the name of *inocarpus edulis*. Another large tree likewiſe growing in the Eaſt Indies, and known by the botanical name of *eugenia malaccenſis*, is not uncommon in theſe iſles; its juicy refreſhing fruit is eaten in great quantities, and bears the name of *e-bàya*: there is another large plant, which theſe iſles have in common with the Eaſt-Indies, known in the Molucca iſlands by the name of *pandang*, in Taheitee, by that of *e-whàra*, and to which we gave the botanical name of *athrodactylis ſpinoſa*. (See *Forſter's Characteres Gen. Plant. p.* 149, *tab.* 75.) Its fruit grows in large cluſters, and when ripe, it has an agreeable ſmell, but the taſte was to me very diſagreeable and aſtringent; the natives find it more palatable: the ſame plant yields to them its large leaves, which dried, are employed for covering, with a good thatch, the roofs

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roofs of their houſes: the male-flowers of this plant are ſtrewed on the head in the ſame manner as powder is uſed by us, and its agreeable ſmell is reckoned a fine perfume for the better ſort of people, and called *beenànno:* the Banians have imported this plant into Arabia or *Yemen*, on account of its odoriferous male-flowers. Forſkal believes they have only the male plant in Yemen, where it is called *keura*; one ſingle ſpike of its flowers is ſold for about eightpence.* The *morinda citrifolia*, has, in Taheitee, the name of *e-nòno*, and its fruit is ſometimes eaten by the lower claſs of people, when they can procure nothing better: the roots of the *tacca pinnatifida*, or, as the natives call it, *peea*; thoſe of the *dracontium polyphyllum*, or *tevèh*, and of the *pteris grandifolia?* or *e-narè*, are frequently eaten; the ſecond and laſt only in caſes of neceſſity; when the leaves, of a kind of purſlane *(portulaca lutea)* called *e-atoòree*; thoſe of a *ſolanum* or *poorahèitee*, together with the ſtalks of the *boerhavia procumbens*, or *enoona-noona* are alſo eaten, after having been baked: the roots of the ſweet potatoe, *(convolvulus batatas)* or *e-oomàrro*, and of the true yam *(dioſcorea alata & oppoſitifolia)* or *e-oòwhe*, are regularly planted, and uſed as the beſt eatable during the ſeaſon, when the bread-fruit is not to be had: the kernel covering the inſide of coco-nuts, is likewiſe frequently

 eaten

* Forſkal Flora Ægyptiaco-Arabica. Havniæ, 1775, 4to. page 172.

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eaten by the natives. The knowledge only of vegetables fit for food, forms a conſiderable liſt of names, and of ideas connected with them; nor have we enumerated all thoſe which are occaſionally eaten. In the Friendly-iſles, the *ſhaddock (citrus decumanus)* is common, and called *mòreea*, or *mòlooa*: in Mallicollo they have *oranges*: in the iſle of Tanna, the *eugenia iambos*, and an other *eugenia* are uſed for food: the natives likewiſe eat ſeveral ſorts of figs, and of one ſpecies the leaves are dreſſed in a kind of pie, made of yams and plantanes; the kernels of the *(terminalia catappa)* and of the *ſterculia balanghas*, are likewiſe eaten: at New-Caledonia, the bark of the *hibiſcus tiliaceus*, which they cultivate, is uſed for food, but is, in my opinion, a wretched kind of aliment.

The next neceſſary care, after food, is RAIMENT; and in this reſpect the natives of Taheitee, and the neighbouring iſles, are certainly well provided; it is therefore no ſmall trouble to teach the young people all the various branches of manufactures relative to clothing. Their dreſs conſiſts chiefly of three different ſorts; the one is a kind of cloth manufactured from the bark of trees, the ſecond conſiſts of various ſpecies of matting, ſerving for various purpoſes; and the laſt article comprehends all the different ornaments and dreſſes appropriated for certain ranks, or uſed only on certain occaſions, or for performing certain ceremonies or religious rites.

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The art of making their CLOTH is comprehended under many branches.

The *materials* of which they are manufactured are different: in general the cloths are made from the bark of trees; the beſt ſort of cloth is from the bark of the *aoùta*, or *morus papyrifera*. This plant is very carefully cultivated, in a good and rich ſoil, which the natives take care to manure and prepare for the better growth of theſe plants, by mixing with it all kinds of ſhells; the ground which they deſtine for the nurſery of *aoùta*, is commonly enclo ed by deep trenches, in order to prevent men and animals from hurting the young trees; in this ſoil they plant the young ſhoots of the *aoùta*, in regular rows, at the diſtance of about 18 inches, or two feet; they lop off the leaves and branches that are ſprouting out, which operation increaſes the main ſhoot, and invigorates its ſtrait growth; as ſoon as the ſaplings have attained the ſize of an inch diameter, and the heighth of about ſix or eight feet, they are drawn up; the roots and tops are then cut off, and ſuch parts of the root as have young ſhoots, are carefully preſerved and planted again: of the ſtrait main ſhoot, the bark is ſlit up longitudinally, and put into a running ſtream, under a board loaded with ſtones; when the water has rendered the filamentous part of the bark more flexible, diſſolved the gummous ſubſtance which joins them, and ſoftened the pulpy intermediate ſubſtance, then the women ſcrape the bark, in

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or near the water, on a ſmooth board, ſet in an oblique direction. A thin bivalve ſhell *(tellina gargadia)* is the inſtrument they make uſe of for this purpoſe, and they frequently dip the bark in the water during the operation; the ſmall narrow ſlips thus prepared are carefully ſpread on plantane-leaves, to the breadth and length which the piece of cloth is intended to have, or which the quantity of bark will admit; and in this condition they remain a whole night, and from the reſiduous gummoſity of the bark, the fine filaments are ſo cloſely joined, that the whole makes next day but one piece, after the water is drained or evaporated. Great judgment is to be obſerved in ſpreading the ſlips of bark, for as they are not of equal thickneſs, they are often obliged to mend thoſe places where the bark was too thin. Theſe large pieces are carried to ſheds, ſomewhat remote from their habitations, where the women join in working: one or more ſit at a long, ſmooth, ſquare piece of timber, on which they beat the cloth with a ſquare inſtrument of heavy wood, called *toa*; each of the ſides of this inſtrument is furrowed longitudinally by cloſe grooves, of different dimenſions, and the ſide which has the coarſeſt grooves is applied firſt in beating, and gradually the finer ones are uſed, till at the laſt operation the cloth is reckoned fit for uſe. This beating joins the fibres ſo cloſe together, that the whole being dry, is really of a good conſiſtence, though the leaſt moiſture ſeems to diſſolve the whole texture; ſome pieces

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pieces of the beſt ſort of bark are beaten more than the common, which makes the cloth fine and extremely ſoft, not much unlike our muſlin. During the beating they conſtantly ſprinkle the ſtuff with water, which ſtands near them in cups of coco-nut-ſhells; after this operation the cloth is bleached, and waſhed, to make it whiter and ſofter; ſometimes they make of ſuch ſoft and fine cloth, (called in Taheitee *hoboo*) ſeveral large layers, which they join by a kind of glue, prepared from the root of the *tacca pinnatifida*; theſe layers are again conſolidated by beating, again rubbed, waſhed and ſoftened, which operation makes it downy, ſmooth, and warm. The bread-fruit tree yields likewiſe a material for cloth; the natives plant the young ſhoots as the mulberry tree; the bark is ſtripped off, ſoaked, ſcraped, laid out, and beaten in the ſame manner, and the cloth it affords is ſomewhat coarſer, and called *too-erroo*. A fig tree, called *eaoùwa*, nearly related to the *ficus indica*, and another kind, called by us *ficus aſpera*, is likewiſe employed, for making a ſpecies of cloth from its bark, which is always of brown or cinnamon colour; this cloth they call *òra*, and the way of manufacturing it is not different from the method deſcribed before; as this cloth reſiſts the water more than any of the other two ſorts, it is in high requeſt, and chiefly worn by the people of quality, after being previouſly perfumed.

Not

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Not only the difference of materials, but alſo the *deſtination* and *colour* cauſes various differences in the cloth: in general, every kind of cloth is called *aboù*; but a garment, chiefly of the ſort called *hoboo*, intended for the women, is named *paroovài*: if in the middle of a piece of about ſix feet in length, a longitudinal hole is cut, the natives call this dreſs *teèpoota*; it is a very common garment for both ſexes, who put the head through the hole, and ſuffer it either to hang loſe on both ſides below the knees, or they incloſe it by another piece of cloth, coming up almoſt to the breaſt, and ſerving inſtead of a wrapper. Pieces of cloth are uſed by both ſexes as a ſaſh, which covers their nudities; that which is worn by men, they call *màro*; that by women *parèoo*: red cloth is called *ewha-àïo*; the yellow kind is named *heapà*: there is a yellow cloth on which they make red figures, by dipping a bamboo reed in the red die, and ſtamping it on the cloth, this is known by the name *apà*; the ſort which is not only brown, but covered with a kind of varniſh or gummoſity, they call *poowhìrree*. Their dies are very fine and bright, and would deſerve more attention if they were laſting: the red die requires a good deal of labour and care in preparing it; the fruit of a ſmall fig called *mattèe (ficus tinctoria)* affords a drop or two of a milky juice, when it is broken off from the tree; this juice is carefully gathered in a clean cup of coco-nut ſhell, and after having a ſufficiency of it, they ſoak it in the leaves of the *etoù*, or

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cordia ſebeſtena, which imbibe the milky juice, and ſoon tinge it of the fineſt crimſon imaginable; the whole is gently ſqueezed out, and ſtrained through the filaments of coco-nuts, and uſed to die cloth with: inſtead of the *e-toù*, ſometimes the leaves of the *tabìnnoo*, or *tournefortia ſericĕa*, are employed; or thoſe of the *pohoòa* or *convolvulus braſilienſis*, or even thoſe of the *e-poòa* or *ſolanum repandum*: the ſole juice of the *matteè*, affords a yellow colour; but the beſt yellow die is made of the juice dripping from the peduncles of the *hibiſcus punctatus ſ. populneus*, or *e-mèero*: the watery infuſion of the root of the *e-nòno*, or *morinda citrifolia*, dies a fine yellow; another kind is extracted from the *tamànnoo*, or the *calophyllum inophyllum*: one of the ſpurges called *epìrree-pìrree*, affords a bay brown colour; and the ſoaked bark of the *tootoòe*, or *aleurites triloba*, yields a gum or reſinous ſubſtance, uſed by theſe people for varniſhing their brown cloth *(poowhirree.)*

MATS are employed for various purpoſes, and are either articles of dreſs, or are uſed for carpeting and bedding, or form their ſails; thoſe for dreſs are chiefly worn when they go a fiſhing, and in rainy weather. The bark of the *pooroù*, *or hibiſcus tiliaceus*, is manufactured into mats, named *e-poorhòa*, which are very ſtrong, and look as if they were made of a coarſe flax or hemp; ſome of them are very fine, but have always a kind of harſhneſs: the mat called *e-whardu* is made from the leaves of a ſpecies of *athrodactylis*: the fineſt

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glossy white and shining mats, called *e-vanne*, are made of the membranaceous and best prepared part of the same leaves of *ewhàra* or *athrodactylis*, and sometimes of a kind of grass: another and very strong sort, manufactured of rush, is used to sleep on, which even the name of *Moòya* seems to imply: very nearly related to it is the sort, which is often striped or checked with black, and used occasionally for carpeting, or to dance on, in their dramatic pieces; these last mats are 20 or 30 yards in length; the bark of a tree, which I could never discover, forms their largest and very strong mats, called *hohòra*, one of which, when expanded upon a semioval frame, is an *eìya* or sail for their canoes.

The Taheiteans have various ORNAMENTAL and CEREMONIOUS dresses, which they manufacture in a most ingenious manner. After the death of a person of some note, one of the next relations puts on a kind of masquerade dress, called by them *Hèva*, which is very remarkable, as well on account of its curious workmanship, as the strange assemblage of its parts and extraordinary appearance. The enumeration of all the pieces belonging to it, with a short description of them, will not perhaps be thought superfluous, as it may set the arts of this people and their curious contrivances in no improper light. The first part of this dress they call *Ta-oìpo* or head-piece; it is formed of a piece of mat tied together into the form of a cone or a cap, to which they paste a

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piece of cloth reaching to the neck and ſhoulders, and covering the ears; they paſte alternately red, brown and white tranſverſal ſlips, in order to make this cap, and on its top they place a thick garland of gloſſy dark green pigeons feathers, to which ſometimes red or yellow feathers are joined in ſmall bunches, made of coco-nut filaments, the whole is encompaſſed by a kind of rope, formed of two kinds of Taheitee cloth, and other ſtrings, tied together by the bark of various kinds of convulvuli, died black and red; this is called *Moyhò*. The next piece conſiſts of ſeveral parts, the firſt of which is named *pa-tèea* to which they faſten the *pa-raè*, or frontlet; the *pa-oòto*, or maſk before the mouth; and laſtly, the *hoopà*, or ſtomacher, which form the moſt curious part of the whole dreſs. The *pa-teèa* is a large ſhell, of the oyſter kind; they poliſh away its rough outſide, and leave only a brown coating, which gives it much the appearance of turtle-ſhell; this ſhell is perforated on its margin by many ſmall holes, which ſerve to faſten to it a border of ſhining dark green pigeons feathers, fixed on a plaited liſt of coco-nut filaments, and into this margin they fix a great quantity of tail-feathers from the tropic bird in a diverging manner, ſo as to appear like the rays of a luminous body: the *pa-rèe* is commonly joined to the *pa-teèa* by ſtrings; this is again a ſhell of the ſame kind as the former, and has a very narrow hole, through which the perſon looks who wears the maſk: below this is

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the *pa-ootoo*, or a thin black board, of the form of a ſegment of a circle, about a yard acroſs, and about ſix or ſeven inches wide, to which they fix five mother of pearl ſhells, poliſhed on both ſides; on the extremities the two ſhells are again fringed, with pigeons feathers, as in the *pa-teèa*, and from them they ſuſpend two taſſels, of about 18 inches long, made of pigeons feathers, called *òrro-òrro*: the *hoopa* is made of ſmall pieces of mother of pearl, of about an inch and a half, or two inches long, and one or two tenths of an inch wide, with a hole on each end, by which theſe ſmall pieces are fixed in rows, ſo as to form a kind of apron or ſtomacher, there are ſometimes 15 or 20 rows of theſe ſmall pieces, in one *hoopa*. If we conſider, that theſe holes are all bored by other ſharp ſhells or bones, that the pieces muſt be ground of equal length and width, and then faſtened in ſuch a manner as to lie flat, it muſt be obvious, that the making of more than 2000 ſmall pieces of mother of pearl, and the joining them together, is a work of immenſe labour, requiring much time and an unwearied patience, and what is ſtill more, a nicety and accuracy in executing them, all of equal length and width: the *parèe* therefore, or the compound of theſe four pieces, is reckoned among the natives one of their moſt curious ornamental dreſſes; and which they ſeldom part with, unleſs for a very valuable conſideration. Next to this follow the *abou-aiboo*, which is a ſtrong *teèpoota*, covered on its foreſide with circular pieces of coco-

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coco-nut ſhell, of about and inch and a half diameter, and diſpoſed in rows; the *ahou-aiboo* is put over two other *tèèpootas*, the lowermoſt of which is white or red in the wideſt, the next is brown and narrower, and the *'ahou-aiboo* is the naroweſt of all: theſe ahous they gather by a belt of two kinds of cloth, twiſted together into a rope, and called *naoù-naoù*: over all this they ſpread on the back of the chief mourner a kind of mantle, made of netting of ſtrings, and covered on the outſide with gloſſy pigeons feathers; this cloak they call *ahou-roòpe*; in one hand the maſked man, performing the ceremony, wears two ſtrong mother of pearl oyſter-ſhells, which he knocks againſt one another, and cauſes a loud noiſe, announcing his approach; theſe clappers are called *tettè*; the *pàyho* is held in the other hand, and conſiſts of a ſtick, into which a row of ſharp ſhark's teeth is faſtened, with which they cut the people, who may happen to be dilatory in retiring at the approach of the ſolemn proceſſion.* All the parts of this one dreſs are the moſt ingenious and moſt compound work they have on their iſles, and muſt of conſequence require a peculiar handineſs and ſkill in executing with ſo much neatneſs and elegance.

The

* In Hawkeſworth's Compilation, vol. ii. p. 234, plate No. 5, and in Captain Cook's Voyage, vol. i. p. 185, plate 44, is a repreſentation of a man dreſſed in the *heva*, or mourning dreſs: but it muſt be obſerved, that the tropic bird's feathers go not beyond the *ta-oopo*, and are never fixed to the *pa-tcca*, as has been improperly repreſented in the plate, drawn by Mr. W. Hodges.

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The chief warriors who fight on the ſtages of their war-canoes, have likewiſe a dreſs peculiar to themſelves, whoſe fabric requires ſome labour and ingenuity. The *awhoù* is a helmet of more than five or ſix feet high, formed of wicker work into the ſhape of a long cylinder; to this they add a frontlet, which is between three and four feet in length, it covers the front of the helmet or the half of the cylinder; towards the top however it does not lie cloſe to the cylindric baſket, but projects ſomewhat forward in a hollow ſhape; all this frontlet is covered with green gloſſy pigeons-feathers; ſometimes they form of white feathers one or more borders round the whole frontlet, and to its outer edge they fix a great number of tail-feathers of the tropic-bird in a diverging manner, which gives the warrior a very grand appearance. Theſe machines can by no means be worn, becauſe they are ſo unwieldy, and at the ſame time ſo light, that the leaſt breath of wind muſt almoſt overſet the man, who ſhould preſume to wear one of them; ſo that I am of opinion theſe helmets are more for ſhew than real uſe, in defending the head againſt ſtones, or blows of clubs, and lances; it may poſſibly ſerve as a ſtandard, to rally the troops about their leaders, which is not quite improbable, as we ſaw only ſingle helmets in one or two war canoes, in a fleet of 169.* The warriors on the

* In Sydney Parkinſon's Journal, of a Voyage to the South-Seas, plate xi. page 71; and in Capt. Cook's Voyage, vol. i. plate No. 61, p. 342: repreſentations of this helmet may be ſeen; that in Parkinſon gives by far the beſt idea of it.

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the fighting-ſtage wear almoſt univerſally the gorget or breaſt-plate, called *ta-ômee*, likewiſe made of wicker-work, covered with ſemi-circular liſts of coco-nut fibres, which again are bedecked with ſhining gloſſy pigeons feathers, ſet off with two or three ſemi-circular rows of ſharks-teeth, all which are bored and faſtened to the breaſt-plate by ſtrings; the whole gorget is fringed with long white dogs hair, imported from the Low-iſles to O-Taheitee, and the Society-iſles; on the top there are likewiſe mother of pearl ſhells, fringed with pigeons feathers; this breaſt-plate is hung on the neck by a ſtring, and defends the breaſt againſt the thruſt of one of their lances, headed with ſpines of the ſting-ray.* The making theſe war-dreſſes requires very curious and dextrous workmanſhip, and likewiſe a good deal of time and patience. ARTS AND SCIENCES.

The manufacturing various baſkets, ſtools, cloth-beaters, and other utenſils, tools, and inſtruments, in uſe among theſe nations, is ſo multifarious, that a minute deſcription of them would require too much time; we muſt not therefore enter upon the detail, but will confine ourſelves to a brief deſcription of the third great branch of mechanical arts, exerciſed by theſe people, and relating to

* A good and faithful repreſentation of one of theſe breaſt-plates may be ſeen in Hawkeſworth's Compilation, vol. ii. p. 184, plate No. 8, drawn and engraved by Mr. James Roberts.

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to the building of their houſes. The materials, ſize, and deſtination of their houſes and buildings, conſtitute their difference. The wood of the *a-hoòdoo*, or *barringtonia ſpecioſa*, of the *inocarpus edulis*, or *ràtta*, of the *evee*, or *ſpondias pomifera*, of the *tamànoo* or *calophyllum inophyllum*, and of the *oòroo* or *artocarpus communis*, are the various materials uſed in building their houſes. The natives call in general a houſe *te-whàrre*; ſome are ſmall and round, and are called *te-whàrre-potto*; thoſe which are very large and long, are named *tewhàrre-tàrra*; and beſides theſe, they have houſes or ſheds to ſhelter their large double war-canoes. The common houſes are from 15 to 20 feet long, and 10 or 15 wide, the roof eight or nine feet high in the middle, and about five or ſix feet on the ſides, though the eves project a good way beyond the ſides, or poſts.

The houſes are all built with three rows of poſts, ſupporting the roof *(erà-woro)*: the middle row of poſts, *(epò-oo)* is about 16 or 20 feet high in the large houſes, and from eight to ten in the common or ſmaller ones; they ſupport a beam, forming the ridge of the roof, *(tocore-yore)* on which they fix the timbers, or ſpars of the roof, *(ahèo)* which are again borne by a long beam, called *epài*, under which a row of ſide-poſts *(tooto-òroo)* is placed, ſtanding on another beam *(too-àrroo)* that reſts on the ground: ſometimes they fill theſe ſpaces between the beams and poſts on the ſides of the houſe with bamboos, and this method of building they call

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call *parooroo*, but commonly all the underside is open. The roof itself is formed of the leaves of the *athrodactylis indica*. Now and then I observed the house open, but furnished below at the height of about one foot, with a fence of bamboos. Some small houses are likewise included in a kind of partition made of small sticks in the manner of hurdles. The natives commonly keep their hogs during the night, in the house, and have in one corner of it contrived an inclosure *(pa boòa)* covered on the top with boards, on which they sleep. ARTS AND SCIENCES

The large war-canoes cost the natives infinite labour, and afford the best specimens of their genius, industry, and mechanical arts; it is therefore no wonder that they should be very careful in the preservation of these large boats, which are the very means of their preservation and liberty, against the invasion of their enemies. Huaheine has in its neighbourhood the isles of O-Raietea, Taha, Borabora, and Mouroa, all under the dominion of *O-Poònee* a powerful chief, who conquered Raietea and O-Taha, and would likewise have extended his dominion over Huaheine; but the inhabitants of this island, with their chief *Oree*, were attentive to their true interest, and for that purpose kept constantly a large fleet in readiness under the above mentioned sheds. It was here likewise that I observed a double war-canoe, which required 144 paddles, and eight or ten steersmen to move it forward; the stage for fighting

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was roomy, and could contain about 30 men. Theſe boat-houſes are ſometimes 40 or 50 or more yards long, about ten yards wide, and the eves of the roof are brought down within two or three feet of the ground. Sometimes the ſides of the roof are in the ſhape of ſegments of a circle meeting at the top.

As I have here mentioned the large war-canoes of theſe nations, I will give a few hints relative to the ſtructure of their boats. The inhabitants of the Society-iſles diſtinguiſh their ſmaller canoes *(E-wàha)* * from the larger ones, *(pahèè)* and theſe are again different as their uſes, for fiſhing, for long voyages from iſle to iſle, and for war. The latter have high ſterns, and two of theſe boats being alwâys tied together, towards the head of them ſtands a ſtage or platform *(Etoòtee)* raiſed on ſix or eight pillars about four or five feet high, and proportioned to the ſize of the boat. The warriors ſtand on theſe ſtages and fight the enemies who defend the ſhore. The boats are commonly built of the timber of the *E-avèe* or *Spondias pomifera* or the *E-márra* or *Nauclea orientalis*. The keel is one piece of timber hollowed out, in the ſhape of a trough; in very large boats they employ more than one piece for the

* The name *E-wa'ha* is certainly pronounced by the natives of the Friendly-iſles and in New-Zeeland with a ſtronger ſounding of the aſpirate *h*, by ſaying *Te-wagga*. In like manner the word *Tee'hee* is changed into *Tee'ghee*, the word *Tahata* into *Tangata*, *E-hoe* or *Eh:he* is in New-Zeeland *Hegghee*, *Tohee* is *Toggbee*, *Tareha* is *Taringa*, *Teohana* is *Teoghana*, &c. &c.

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the keel, but never exceed three. The next board is ſet on the keel in a diverging direction; the third board has a convex ſhape on its outſide, but on the inſide is concave, and the laſt board is ſet on this bilging board: theſe four boards are fitted amazingly tight and cloſe, and afterwards faſtened by cordage * made of the filaments ſurrounding the coco-nuts; and drawn together, that theſe veſſels are ſufficiently water-tight, without any caulking; and though in the larger boats one perſon is conſtantly employed in baleing out the water, it never gains upon them. The head and ſtern are carved and commonly repreſent a rude figure of a man, called by them *E-teèbe*; which might be compared with the *tutelar genius* of the antient Romans and Greeks. Boats uſed for long voyages have on their foreparts ſmall huts covered with thatch, and

* The moſt antient and moſt ſimple manner of conſtructing embarkations, before the uſe of nails and iron to fix the planks to the knees and timbers, ſeems to have been that of ſewing them together with ſtrings. Plin. Hiſt. Nat. lib. xxiv. v. 40. *Cum ſutiles fierent naves, lino tamen, non ſparto unquam ſutas.* In the ninth and tenth century of the Chriſtian Æra, when all the veſſels in the Mediterranean Sea were nailed together, a veſſel was ſtranded on ſome part of the Syrian Coaſt, whoſe planks were all ſewed together: this the author of the voyages to China of ſome Mahammedan travellers, publiſhed by Renaudot, p. 53, declared to be *an Arabian veſſel from Shiraſ, whoſe conſtruction is ſuch that the planks are not nailed, but joined together in a peculiar manner, as if they had been ſewed*, &c. &c. When the more civilized nations had better contrivances for the conſtruction of their ſhips, by means of iron nails and bolts, the cuſtom of ſewing the planks of veſſels together, was left to thoſe that were leſs acquainted with the arts. The whole Eaſt has now the uſe of iron, and the cuſtom of ſewing the planks of embarkations is only found in the iſles of the South Sea.

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defended on one or two ſides either with boards, or a partition of bamboos, and lined beſides with mats, here the chief people ſit by day, and ſleep at night. The reſt of theſe boats are nearly of the ſame ſtructure with the war-boats; they have a maſt, *(E-teà'a)* a ſail of mats in a frame *(Eiya)*; at the top of the maſt they carry a buſh of young branches of a tree, this bunch of rods is named *E-whatevà*, and from the top of the maſt, or the uppermoſt part of the frame of the ſail, one or two long garlands of feathers are hanging down called *Matìttee*. When they do not join two boats together, but have only one, acroſs the middle of it a long beam is fixed, *(Patòa)* to which they faſten on one ſide ſmall pieces of wood pointing downwards and joined to a piece of ſpar, ſhaped like a keel, i. e. triquetrous, which is nearly of the ſame length with the boat. This out-rigger they call *E-oà*, and it is faſtened beſides to the canoe by one or more croſs beams. Such an apparatus muſt hinder the boat from overſetting, and hardly retards the motion of the boat. The ſwift proas at the Ladrone-iſlands deſcribed in Lord Anſon's voyage round the world, give the beſt idea of the utility of this apparatus. To the projecting croſs beams about the maſt, the ſhrowds are faſtened, and on the ſide oppoſite to the out-rigger, they faſten ſometimes a large ſtone in order to trim the boat by it.

The

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The fiſhing boats are not unlike thoſe intended for voyages, only the whole apparatus is meaner, and the hut is leſs elegant, if any ſhould happen to be fixed on the boat. This account will convince us that the natives of theſe iſles are not deficient in the knowledge and practice of mechanical arts, and that they carefully preſerve this knowledge, by early inſtructing their young people in all that belongs to their food, raiment, and habitations. If we conſider that a ſtone adze, a chiſſel of the ſame materials, or of bone, and a piece of rough coral rock, together with a ſaw made from a part of the ſting-ray's ſkin faſtened round a piece of wood, are all the inſtruments to aſſiſt them in the ſtructure of their houſes and boats, we muſt certainly give ample teſtimony to their ingenuity. Their mechanical genius I particularly admired, having an opportunity of ſeeing one day a man buſy in ſewing a large canoe together; he employed a ſtick with a forked branch for the purpoſe of drawing the ſtring more powerfully together; one of theſe branches he fixed againſt the lowermoſt plank, and to the other he had faſtened the ſtring or rope, which gave him an amazing purchaſe, and as ſoon as the ſtring or rope was ſtretched to its utmoſt, an aſſiſtant ſtruck a peg into the hole through which the ſtring paſſed, to prevent its giving way again. Their methods of fiſhing and the ſeveral implements uſed for that purpoſe, afford many inſtances of their genius and ſpirit of obſervation. They make

harpoons

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harpoons of reed *(E-tào-werro-eiya)* pointed with a hard wood ſhaped in the manner of the bearded head of an arrow. Their large ſeines *(oopèa)* are employed in ſhoal water only, and are of great extent and made of a kind of phaſeolus and of a convolvulus. Their hooks *(Mattoù)* are formed of pieces of ſhells; thoſe for catching of ſmall fiſh are very neat, ſmall, and of one piece; thoſe for fiſh of a middle ſize, are made of mother of pearl-ſhell, and compoſed of two pieces, the ſhank is formed of the moſt bright and gloſſy part of the ſhell, and the hook is faſtened to it by ſtrings paſſing through ſome holes bored through both pieces, and for the better decoying the fiſh, they add ſome hair, feathers, or tufts of thread to repreſent the fins of ſmall fiſh; this kind of hook they call *vittee-vittee*: the largeſt of all have a ſhank made of wood or bone covered with a brown mother of pearl-ſhell, and have a hook of tortoiſe-ſhell, which often is made of two pieces tied together. The ſtrings for theſe hooks are made of a kind of nettle (*urtica argentea*) *Eroòa* which holds the ſtrongeſt fiſh, (*viz.*) the Bonito or *Peeràra (Scomber pelamys)*, the Albecore or *Eàhai (Scomber Thynnus)*, and the Dolphin or *E-oòma (Coryphæna Hippurus)*: for all other purpoſes they uſe ſtrings and ropes made of the *Emòhoo* or Cyperus alatus, the bark of *Pooròu* or Hibiſcus tiliaceus, the bark of *Màttee* or ficus tinctoria and the *Epeèpee* or phaſeolus amœnus. They make uſe of ſeveral plants and fruits, which when bruiſed

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and mixed with ſome minced meat of ſhell or cray-fiſh, and thrown into the ſea inebriate fiſh to ſuch a degree, that they may be caught by the hands, the chief fruit thus employed is that of the Barringtonia ſpecioſa or *E-Hoòdoo*, and the leaves are thoſe of the Daphne fœtida or *Oào*, the Galega piſcidia or *Ehòra*, and Lepidium Piſcidium or *Enòu*. When they diſcover out at ſea a quantity of birds hovering over a certain ſpot, they are ſure that a number of fiſh is aſſembled there, and they haſten there with their ſailing canoes and ſeveral *vittee-vittees* hung out on each ſide by a bamboo projecting from the canoe at a good diſtance, and they never fail to catch a great number of theſe fiſh. Thus we find that the attention which they beſtowed on the various kinds of fiſh and their nature, gave them opportunities of making proper uſe of theſe obſervations for better and eaſier catching theſe animals, which make ſo material a part of their animal food. *

The moſt neceſſary ideas relative to food, garment, and habitation, form the firſt part of the education thought to be neceſſary among theſe iſlanders. The fertility of theſe iſles, the mildneſs of their climate, together with the happy and joyful temper.

* The inhabitants of the Maldives are likewiſe very expert in catching all kinds of fiſh, with which their ſea ſwarms; and as animal food of quadrupeds is not very common with them, fiſh are their moſt material food. See *François Pyrard's Voyage*, 4to. Paris, 1679, Part i. p. 88, 136, and 166.

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temper of their inhabitants, give them a general turn for ſenſual pleaſures: the leaſt happy occurrence in life is ſufficient to inſpire them with a high degree of glee, which ſets their whole body in motion: they begin to friſk and DANCE, this makes a cadenced or meaſured breathing neceſſary; if in this ſituation man wiſhes to communicate his ideas to the by-ſtanders, he will naturally give his words that kind of meaſure or cadence, which he has adopted with his breathing, this, together with the voice of exultation may be conſidered as the firſt origin of ſinging and MUSIC: if the ideas he wants to expreſs by words, are the true feelings of the man, they will of courſe be more animated; the images ruſh forth with uncommon rapidity, he has not time to expreſs the idea itſelf, he ſubſtitutes therefore any thing nearly related or ſimilar to it, he purſues every lively quality of the thing or perſon he ſpeaks of, and thus gives riſe to POETRY, its imagery, metaphors, ſimiles, and the frequency of epithets. When theſe arts have ſubſiſted in a country for ſome time, the inhabitants find likewiſe a pleaſure in repreſenting by mimic actions and words certain well known ſcenes of life, interſperſed with ſome coarſe jokes, and ſome ſtrokes of unpoliſhed wit. The better they are able to imitate the true characters, the ſtronger they expreſs the diſharmony or diſproportion of theſe actions or characters, and the greater is the pleaſure they procure to their audience; and thus do they give life and

exiſtence

existence to the DRAMA, a new kind of diversion. After these arts have once been applauded and become fashionable in a nation, it is very natural that either parents or some other persons, who have attained to some degree of perfection in these arts, should communicate to the rising generation the principles upon which they acted in order to obtain some eminence in their profession: and thus the second part of education is carried on among the more polished nations of the South Sea. Their dances, poetry, music, and dramas, are however by no means to be considered as performances which have any degree of perfection or excellence; they are the first rude beginnings of arts, and for that very reason they are in more general use, than the same arts are among us: females commonly dance at Taheitee and the Society-isles, and men but seldom; however they are all acquainted with the steps and motions usual in this diversion. Every individual can compose verses *extempore*, and sing them at the same time; and their dramatic performances are commonly extemporaneous pieces, and a mixture of music, poetry, and dancing, so that the *Improvisadores* might here find in the opposite hemisphere people possessed of this admired qualification. ARTS AND SCIENCES

The measured steps of their women, keep excellent time with their drums, which are beaten by fingers briskly and loud, and commonly accompanied by songs. The dress of the women in

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the greater dramatic dances has already been deſcribed, * and is not peculiarly connected with that art; however ſo much appears from their clothes collected into long petticoats, that they by no means think the excellence of the performance to conſiſt in the graceful motion of the feet, as they carefully cover them; but in the motion of their hands and fingers, they ſhew in my opinion, the greateſt dexterity and elegance. They have generally long well ſhaped fingers, which are wonderfully pliant, ſo that they can with eaſe bend them ſo far back as to form with the reſt of the hand a ſegment of a circle, and in this attitude they move them with an aſtoniſhing agility. This dance is called *Heèva he-oòra*, and the motion of the fingers *Eòree*. But beſides this, they ſhake their hips in a rotatory motion, both when they are ſtanding and when they are leaning proſtrate on their knees and elbows, with a velocity which excited our aſtoniſhment, and this is named *òne-òne*. There are other dances wherein they uſe meaſured ſteps, hold another by the hands and clap with them; which is called *pa-àta*. During the various kinds of dances, they never fail to make wry mouths, which, in our opinion, were the moſt extravagant and diſgracing diſtortions, inſtead of being capable of giving the ſpectator ideas of gracefulneſs and harmony: habit has taught them to ſcrew the mouth

* See Hawkeſworth, vol. ii. p. 264, and George Forſter's Voyage, vol. i. p. 399, and following.

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mouth into an obliquely ſlanting direction by a kind of ſudden convulſive motion of the lips, and cuſtom only has made the ſight of ſo unnatural and offenſive a grimace a performance which pleaſes and merits applauſe. This diſtortion is called *ootoo-ròa* (large lips). There are other dances uſual in their nocturnal feſtivals with the *Arreeoys*, which, none of our ſhips company had an opportunity of ſeeing, and are according to the accounts of the natives extremely indecent and laſcivious; theſe are called *t'eài-morodèe*, and the women exhibiting them, *Too-àha*. The exerciſe of the common dramatic dances is very violent, the motion of the hands elegant, that of the feet not to be ſeen, that of the hips ſomewhat ſtrange, and according to our notions indelicate; and laſtly, that of the mouth horrid and diſagreeable. The women when performing were always attended by a man, who accompanied the drums with a kind of ſong; and by ſome loud ſpoken words or the clapping of hands, directed their motions; which, in my opinion ſeems to intimate that they have a kind of plan in their dances, and that the tranſitions from the oblique ſteps, to the motion of the fingers and agitation of the hips, is in ſome meaſure connected with the words ſpoken by the maſter of the ballet.

Their MUSIC is by no means ſo perfect or harmonious as their dances or poetry: this branch of the polite arts having made but an indifferent progreſs among them. The flute in the hands of a

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Taheitean has no more than three holes, and is therefore incapable of a variety of notes, and the muſic they execute upon this inſtrument is but a poor humming: even their vocal muſic has no greater compaſs than three or four notes, however ſome of their ſongs were not quite diſagreeable. The inhabitants of the Friendly Iſlands are better verſed in muſic than the Taheiteans, and the tunes of their women had ſomething pleaſing to our ears when we firſt heard them at *E-Aoowhe* or Middleburgh. The inhabitants of Tanna * and New-Zeeland have in their ſongs greater variation and extent, which certainly intimate better and more improved talents for this branch of the polite arts.

The VERSES of the Taheiteans are always delivered by ſinging, in the true antient Greek ſtyle, and what is ſtill more remarkable, we found that many of theſe verſes were the productions of the moment, for we obſerved that their poetry had ſome relation to the perſons on board our ſhip, or to ſome tranſactions which happened during our ſtay: but they had likewiſe many couplets or ſongs which had no reference to the perſons or tranſactions occaſioned by the

* When we were at Tanna, we heard every morning at day-break a ſolemn ſong, iſſuing as it were from the point lying to the Eaſt of the harbour, and this circumſtance ſeems to prove that the natives of this iſland employ even their *Muſic* as part of their ſolemn worſhip of their Deity. We were ſtill more confirmed in our ſuſpicion, when we two or three times attempted to viſit this Eaſtern point, and always found the natives ready to defend the ſacred place by arms. See likewiſe George Forſter's Voyage, vol. ii. p. 300, and 362.

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the preſence of our ſhip. Their verſes ſeem to be regularly divided into feet, and they obſerve the quantity and expreſs it in ſinging. As to the beauties of their poetical ſtyle, we were not able to judge of them; becauſe we were not ſufficiently acquainted with their language; thus much however we obſerved that many words occurred in their poems which were not uſed in common converſation. The women on board our ſhip, ſeeing in the night the moon ſhine, frequently ſung the following couplet or *pehai*. ARTS AND SCIENCES

Tĕ ōō|wă nō | tĕ Mā|lămā
Tĕ ōō|wă tĕ hēē|nārō.
The cloud within the moon
That cloud I love!

We will tranſcribe one couplet from Hawkeſworth which the natives compoſed when the Endeavour was at O-Taheitee. *

Epăhā| tāyĕ| Mālămă| tāiyĕ
Nŏ Tăbā|nĕ tō| nŏtā|wă whănnō| māiyĕ.
Perhaps with friendly light, this moon we view,
Has guided Banks, while to his friends he flew.

From the purport of this couplet it appears, that it was made when the moon was ſhining; and it may likewiſe be obſerved, that

* Hawkeſworth, vol. ii. p. 205.

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that the ſyllables at the end of each verſe form rhymes, which cannot be thought to be the effect of accident, though all the other couplets in Hawkeſworth, together with theſe two now before us, are without rhyme. From whence it ſeems to follow, that their poetry admits both of rhymes and of blank verſe.

Another ſuch couplet was frequently ſung on board the Reſolution, in 1774.

Awă|hēē tĕ păhēē| nŏ Tōōtē
Tĕ nēē|ā tŏ Tĕō|rĕe hŏrŏ|á - ē.

We can by no means vouch that this diviſion of the metres and the quantities are perfectly true, but hearing the words, or reading thoſe in Hawkeſworth, we ſuppoſed that the quantities were ſuch as we have marked over the words. In their prayers, and likewiſe in their dramas and on other ſolemn occaſions, * the language is different from what we uſed to hear in their common converſation, and

* When we were in New-Zeeland and the man in Duſky Bay was willing to come on board our ſhip, he pronounced a *carmen* or ſpeech in a very cadenced and ſolemn manner, which laſted about two minutes, holding at the ſame time a green branch in his hand, as ſoon as he had finiſhed this ceremonious formule, he ſtruck the ſhip with the branch juſt as he had done before he began the ceremony, and then threw the branch into the ſhip. In Queen Charlotte's Sound, a party of Indians came on board our ſhip, whom we had not ſeen before, and one of them held a green flag in his hand, while another perſon delivered a long, ſolemn, and cadenced ſpeech. The ceremony and ſolemn prayer of *Tupaya* on the firſt landing at

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and might juſtly be ſtiled a cadenced metrical performance or a *carmen* in the acceptation of the word as it is uſed in the formule delivered by the Roman *Feciales*, Livii. Hiſt. lib. i. cap. 24.

To the laſt branch of the liberal and polite arts exerciſed by the natives at Taheitee and its neighbourhood, belong their DRAMATIC PERFORMANCES. Theſe are blended with dances and ſongs, with this reſtriction, that men only are the acting perſons, in the ſame manner as at Rome, where no females were permitted to act. The drama is a ſimple repreſentation of the common occurrences of life. A man entruſts his ſervants with the care of his goods, they fall aſleep, and though they are lying on their maſters property, the thieves are ſubtle enough to ſteal them away from under the perſons who were appointed to watch them; ſometimes the thieves are detected and ſeverely beaten, and ſometimes they return the blows. In another farce, a man has a daughter, who has a lover; the father diſlikes him and refuſes his daughter, and being afraid of being deceived he watches her cloſely, but in the dead

Huabeine ſeems to have been of the ſame nature, and it was repeated by him on the firſt landing at *O-Raiedea*. See Hawkeſworth, vol. ii. p. 251, and 256.

At our firſt landing in New-Caledonia, the Chief *Te-abooma*, and another Chief pronounced ſome cadenced, ſolemn ſpeeches, intermixed with ſome ſhort reſponſes from certain old men. See George Forſter's Voyage, vol. ii. p. 382. All which not only proves that the firſt interview and making of peace is a ſolemn act obſerved by nations of very different origin, and living at a conſiderable diſtance from one another, but alſo that their ſolemn ſpeeches on theſe occaſions are a kind of poem or cadenced metrical performance.

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dead of the night, the lover meets the fair one and perſuades her to run away with him; the conſequence of this affair is the birth of a fine boy; the lady is in labour on the theatre and at laſt a large boy is exhibited, who immediately runs about the ſtage with the *placenta* and long *funis umbilicalis*; which is here not conſidered as indelicate, becauſe every body is acquainted with the incident, the children of four or five years not excepted; and the oddity that the new-born child runs about and eſcapes the midwife, whoſe buſineſs it is to catch him, cauſes an univerſal and loud peal of laughter. The girls father upon ſeeing the cleverneſs of his grandſon, is at laſt reconciled to his ſon-in-law.

Of this turn (though not in every particular) was the little extempore farce ſeen by ſome of our friends at Huaheine, and which ſeemed to be levelled at a girl, a native of *O-Raiedea*, who came with us from Taheitee in order to return to her parents, from whom ſhe had eloped ſome months before with a young *Arreoy*. Though the piece was but rudely performed, it however put the girl to ſhame, and drew tears from her eyes, which naturally muſt have a good tendency, eſpecially with ſuch perſons of her ſex as might be tempted to follow her example. Upon the whole, this circumſtance gives us a very good idea of the nation in every reſpect: If we conſider the poor girl, who was thus expoſed, her baſhful behaviour and her tears are certainly irrefragable proofs of her modeſty

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and repentance. In a genial climate, with a warm conſtitution, a feeling heart, and an education which made her acquainted with all the myſterious parts of love, even though ſhe ſhould not chuſe to put them in practice, it was no wonder ſhe yielded to the tender ſolicitations of a youthful and vigorous lover, when her own age and the natural levity of the whole nation, contributed to leſſen the crime of her inconſiderate ſtep, and ſtill more ſo, the poſſibility of obtaining a huſband without hurting her character. On the other hand, there is ſomething ſo generous in her behaviour that I cannot help taking notice of it. She became the object of indelicate, but ſharp and ſalutary ſatire, and gave by her tears ample teſtimony of the immorality of her behaviour, and that ſhe felt herſelf aggrieved under ſelf-condemnation, and was not unwilling to become a fair warning to a whole croud of young perſons of her own ſex. If again we conſider the actors who took the opportunity of expoſing immorality for the inſtruction of the riſing generation; they muſt be thought highly commendable for having dared to lay aſide for ſo ſalutary a purpoſe, the reſpect due to a lady and a ſtranger. She was under the protection of a ſet of foreigners, whoſe fire-arms indeed commanded reſpect; but theſe cenſors were not to be brow-beaten by power, or awed to ſilence by wealth, as is too often the caſe in Europe; they failed not to point the ſhafts of their ſatire at an object deſerving cenſure, without regarding the

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conſequences which might accrue to themſelves from thence, being fully convinced of the rectitude of their action, and the ſalutary effects that might be derived for the benefit of the riſing generation. Laſtly the whole audience deſerved in my opinion, likewiſe to be commended; for when the witty ſarcaſms were falling from the lips of their theatrical heroes, they laughed at their jokes; but when they obſerved that theſe ſhafts of ſatire were not diſcharged at random, but made the perſon ſmart who was the object of their inſtructive irony; when they ſaw the marks of returning modeſty, of repentance and ſelf-condemnation, in the attempts to hide her ſhame, and in the copious tears of the poor girl; many an eye was moiſtened, and many a heart ſympathized with her; laſtly, when the dramatic performance was over, every one was eager to give her the moſt unfeigned and unſolicited marks of his eſteem and friendſhip, to comfort her in her diſtreſs and affliction, to countenance her modeſty and return to her duty; and in a manner to thank her for having contributed to the innocent mirth,* as well as to the inſtruction and the warning of her country women. If we reflect upon the want of feeling in the frequenters of our theatres, their indolence and inattention, and I may add their ſhameleſs

* Thanks were returned to Lucius by the magiſtrates of a town in Theſſalia, for having contributed to their mirth in his ſham-tryal. *Apuleius de Aſino Aureo.*

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shameless effrontery, we must give the palm to to the O-Taheiteans, who, like the true children of nature, have a sympathizing tear, and unrestrained feelings, the tribute and glory of humanity, in readiness on all proper occasions. ARTS AND SCIENCES

Mollissima corda
Humano generi dare se natura fatetur,
Quæ lacrymas dedit: hæc nostri pars optima sensus.
JUVENALIS.

Dances, music, and poetry, are used at O-Taheitee to diffuse chearfulness and mirth, the blessings of a social life, into the minds of the whole nation, * and the stage is there, the instructor of virtue, and censor of immorality and vice; in a sense by far more true than it is at present with the refined inhabitants of Europe. When the polite arts become the promoters of so great and so universally beneficial advantages, even the most morose and gloomy philosophers must allow them a place among the objects which ought to be communicated in a system of useful and moral education. In this light therefore, these nations consider these arts; every individual delights in the exercise of them, and endeavours to acquire excellence in them. The professors of these arts are so far from

* Αιει δ' ημιν δαις τε φιλη κιθαρις τε, χοροι τε,
Ειματα τ' ιξυηλα, λουτρα τε θερμα, και ευναι.
Homeri Odyss. Θ 247, 248.

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being degraded by them, that even the Princeſſes of the blood Royal think it not derogatory to their rank to exhibit their ſkill in dancing before a crouded audience of their father's or brother's ſubjects; and the actors were ſome of the *Hoas* or attendants upon the King. We hardly met with a ſingle perſon, who was not able to ſing a tune; and on all occaſions the women ſubſervient to the pleaſures of our ſailors, were ſinging their own extempore compoſitions. We had no opportunity of forming a judgment of the dances or drama of the other iſlands in the South Sea; as our ſtay among them was too ſhort, and the knowledge of their reſpective languages too imperfect.

I cannot leave this ſubject without mentioning that the New-Zeelanders uſed likewiſe to exhibit to us their war-ſong, which was begun by one of them, and accompanied with violent ſtampings, motions, and geſtures, and the brandiſhing of their battle-axes; at the end of every ſtanza of the ſong, was a kind of burden, which was ſung by the whole band of warriors in chorus, with the loudeſt and moſt dreadful vociferations; which gradually worked them up to a kind of phrenzy, the only ſtate of mind in which they fight. In O-Tahà I ſaw a funeral ceremony performed, wherein dancing was exhibited by three ſmall girls, with occaſional interludes by three men. Between the acts the friends and relations *(Hea-bìddee)* appeared dreſſed, in pairs at the entrance of the houſe, but came not

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not in; and afterwards the whole place, about thirty feet long and eight feet wide was spread with cloth, which, was afterwards given to the drummers. I could not learn any other particulars relative to the meaning or tendency of this ceremony, except that it is not uncommon to celebrate the funerals of people of some rank by the rounds * of the chief-mourner, dreſſed in the *Heva*, (deſcribed before p. 450, &c. &c.) and likewiſe by a dramatic performance, accompanied as cuſtomary, by dances and ſongs. ARTS AND SCIENCES.

The knowledge of SCIENCES, as far as they are cultivated at Taheitee and its neighbourhood, lies no doubt, in a very ſmall compaſs, if compared with ours; but it is ſufficient to give them a great pre-eminence above the inhabitants of the other iſles, and contributes in ſome meaſure to their greater happineſs, whether in procuring more enjoyment, or in averting thoſe evils which are the conſequences of ignorance and ſtupidity. *Medicine*, *Hiſtory*, *Geography*, *Aſtronomy*, *Navigation*, and *Divinity*, are almoſt the only ſciences of which the Taheiteans have ſome ideas.

The nations of the South-Sea-Iſles generally enjoy a perfect ſtate of health, and we ſaw many of them, who had attained to old age, for we obſerved grey and even white hairs on their heads; and all the ſymptoms and attendants of old age; though I muſt confeſs, they

* Hawkeſworth, vol. iii. p. 146.

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they could by no means determine with any degree of certainty, how many years they had lived: for they think it ſatisfaction enough to live long, without minutely keeping an account of their age, by months or years. When Capt. Cook came to O-Taheitee in the year 1769, he ſaw TOOTAHA and calls him a middle aged man; * he was no doubt the younger brother of O-AMO and HAPPAI, who both were grey-headed in 1774, when we came to Taheitee; their mother was ſtill alive, and in my opinion between 60 and 70, ſhe had white hair, and was very corpulent, and ſeemed ſtill to retain ſo much vigour and ſtrength, as to render it probable that ſhe might live ſeveral years.

They have no doubt, in theſe iſles diſeaſes, but as far as I am able to judge, from what I ſaw, diſeaſes are leſs numerous, and leſs common, than in our climates and ſocieties. And many reaſons may be aſſigned, which may induce us to believe the inhabitants more happy, and leſs ſubject to that croud of diſeaſes, inſeſting our communities, and cauſing generally ſuch a havock among our Europeans, as muſt ſhock even the feelings of the moſt intrepid philoſopher, or the moſt indolent beholder; for they are nothing leſs than ſcenes of death varied in many hundred ſhapes.

They all live in a climate which muſt be eſteemed excellent; for if you do not uſe immoderate exerciſe, and purpoſely expoſe yourſelf

* Hawkeſworth, vol. ii. p. 84.

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yourſelf to the powerful rays of a vertical ſun, you always find it ſufficiently temperate. The mitigating alternate ſea and land breezes aſſuage the heat of the climate; and in all parts of the South-Sea which we viſited, we found the inhabitants careful to keep under ſhelter during night, in order to avoid the cool and moiſt nocturnal air; and we obſerved in general, that in all other iſlands beyond Taheitee and the Society-iſles, the natives had houſes better calculated to exclude cold and moiſture than thoſe open ſheds: nay, as the rains often came on in ſqualls, attended with cold winds from the cloudy ſummits of their hills, they are equally ſolicitous to take ſhelter at the firſt appearance of them. Their garments made of the bark of the paper-mulberry (*Morus papyrifera*) are at the ſame time a warm and a cool dreſs; ſufficient to ſcreen them againſt the rays of the ſun, and likewiſe to keep off the noxious effects of cooling winds. ARTS AND SCIENCES

The fine tropical fruits, which afford a ſalubrious, palatable, and nouriſhing food, contribute likewiſe to preſerve that healthy habit of body which the natives generally enjoy, for they are as yet ſtrangers to the curſe entailed on European ſocieties, that a man comes into the world with a body, whoſe ſolids are infirm and relaxed, whoſe nerves are tortured by acute pains, whoſe fluids are poiſoned with a *virus* which ſaps his vitals from the very day of his birth, and who has this wretchedneſs ſettled on him, as it were

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by inheritance. Their gluttonous Chiefs and Arees it is true, ſtuff themſelves with immoderate quantities of food, but it cauſes no other inconveniencies than to make them fat and unwieldy. The fineſt fiſhes, and other marine productions, as cray-fiſh, ſhells, ſea-eggs, cuttle-fiſh, and one kind of blubber, ſerve them inſtead of food; and though many of the latter are not eaten by us, they ſeem not however, to cauſe any diſeaſes; eſpecially as the common ſort of people cannot have them in great abundance. As to animal food from hogs, dogs, and fowls, I am certain that their meat is but ſparingly eaten; however, whenever they kill one of the two firſt animals, the chiefs indulge themſelves in devouring the blood, the fat, the entrails, and ſo much of the meat, as few Europeans would be capable of eating at one meal; but as theſe indulgencies are not very frequent, and their ſtomachs prove ſtrong and powerful digeſters, they are ſeldom, if ever ſick of a ſurfeit. Their common drink is freſh water, and in ſome few caſes even ſea-water, neither of which will prove hurtful. But the chiefs and principle people in theſe iſles, uſe themſelves to drink a liquor prepared by chewing the root of a kind of cultivated pepper, *(Piper methyſticum)* which they put into a wooden bowl and infuſe with common or coco-nut-water, and afterwards ſtrain through coco-nut-core; which is then whitiſh, inſipid, or partaking ſomewhat of the taſte of a weak infuſion of pepper. This potion when taken in quantities, makes

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them drowsy, stupid, and intoxicated,* and causes bad consequences, which I will enumerate hereafter. In Taheitee this root is scarce and little used; in Huaheine and the other Society-isles they have great plantations of it; in the Friendly-isles it is still more liked and cultivated, and every where is presented as a sign of friendship. However upon the whole, but few persons use it; it cannot therefore influence the health of the nation at large. ARTS AND SCIENCES.

The frequent use of moderate exercise, in walking from one place to another in their shady cool groves, in felling trees, and slowly excavating, rasping, and piercing their embarkations, or making other utensils, together with the gentle exercise of leisurely paddling

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* It is the general character of all uncivilized nations to be addicted to drunkenness and inebriation caused by various vegetables. The antient Scythians procured intoxication by imbibing the fumes of hemp-seed thrown on hot stones. *Herodot. lib.* iv. 69, 70, 71. *Maximus Tyrius Orat.* xiii. § 6. All the tribes of the Celtic and Teutonic nations brewed beer, ale, and mead; and so did some nations bordering upon the former, though greatly different from them. *Pelloutier Hist. des Celtes*, lib. ii. ch. 18. *Tacitus de morib. Germ.* c. 22, 23. *King Alfred's Orosius in Anglo-Saxon*, p. 26, 27. The Tchuktchi and Yukaghiri on the North-East extremity of Asia, infuse mushrooms, affording an inebriating liquor. All the Mungalic nations, and among others, the Khalmyks ferment mares-milk till it becomes inebriating, or distill a kind of spirituous liquor from it, which they call *Kumyss*. The Mohammedans use opium and smoak tobacco, which last custom among the Khalmyks is practised by women and children. The African Negroes are fond of brandy to excess, *Romer's Description of the Coast of Guinea*; and the same is observed of the Hottentots by *Kolbe*. Nor is any one ignorant how fond the American Savages, both in the North and in the South, are become of brandy. *La Hontan*, book xi.

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paddling their canoes, when they go a fishing, contribute greatly to their salubrious habit of body. However, as the heat of a vertical sun might cause too violent, and too general a relaxation of the solids, they prevent this by frequently bathing in sea-water, after which, they commonly perform an ablution in fresh water. They generally bathe every evening and morning, or at either time according as they have used themselves to it. But as an insensible and strong perspiration generally weakens our bodies very much in hot climates, and by carrying off too many liquids, renders them more obnoxious to putrid diseases, the natives of these isles would be equally subject to this inconvenience, if they had not a custom, which really seems to be intended to obviate the too copious perspiration, for at certain times they anoint their hair and head and the whole body, with the oil extracted from coco-nuts, and made odoriferous by adding the wood, the fruit, the flowers, and the leaves of several scented plants. * Upon the whole, their chearful temper, the absence of cares, their simplicity of manners, with the above enumerated causes, co-operate strongly to prevent the attacks of many varied diseases; and as the greater and more sensible part of these nations, adhere to an exemplary sobriety in every

* François Pyrard Voyage, b. i. p. 126, says the same of the people in the Maledive Islands.

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every reſpect, this evidently contributes much to keep them in health, and in the enjoyment of real happineſs.

We found in the iſles but few people who were diſfigured or maimed, or had any bodily imperfections: however they were by no means entirely free from them. For I ſaw ſome that ſquinted, others that had a film over one eye, and ſeveral blind of one eye. In the iſle of Tanna I obſerved many who had a kind of weakneſs in the eye-lids, ſo that they could not liſt them up beyond a limited extent, but were obliged to raiſe the head in order to ſee things that were upon a level with their eye. I have reaſon to believe that it is not merely an accidental ailment; for I ſaw a man and his little ſon of about five or ſix years, both labouring under the ſame imperfection, ſo that it might perhaps be owing to the manner of living in that family, or be cauſed by the inſalubrious ſpot their hut ſtood on, or perhaps it is peculiar to this, and ſome other families, and is propagated. * I obſerved a few hump-backed, and alſo here and there a crooked perſon, ſome had diſtorted

* There are inſtances that dumbneſs and deafneſs have been propagated from parents upon children; likewiſe blindneſs has been entailed upon children; and people who have either four or ſix fingers on their hands, have procreated children with the ſame imperfection: in the ſame manner it is poſſible, that this defect might be propagated; though I am rather induced to ſuppoſe that this paralyſis of the eye-lids was cauſed by the marſhy ſituation of the huts in which the families lived, and from the conſtant ſmoak with which their huts are filled

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distorted legs, and one man had a leg that was entirely withered and dried up. Among the robust New-Zeelanders, I saw a man of a fine figure with a lame hand. But as we were, especially in the beginning, very little acquainted with their language, and had a great deal of other business upon our hands, we could not minutely enquire into all the causes and particulars of these imperfections. I saw one man at Huaheine, who had a very great *Hernia umbilicalis*, and another in the same place with an immense expansion and schirrosity of the right testicle, which was grown to the size of a child's head, so that all the scrotum, and even the membrane over the penis was entirely filled up with it; and the aperture for making water, was driven to one side, and this man was nevertheless active, strong, and mounted the sides of our ship, with as great agility and unconcern, as if he were not in the least affected by this dreadful accident.

Among the diseases which we had an opportunity of observing in these nations, I must first reckon the *cough*: several laboured under it, especially towards night and in the morning; owing, as is probable, to their being too long exposed to cold rains or the cool

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filled during night, in order to free the inhabitants of the numerous mosquitoes swarming in these marshy woods; there are likewise some kinds of wood, whose smoak makes people either entirely blind, or at least nearly deprives them of their eye-sight. See Osbeck's voyage, vol. i. p. 320.

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of the night on the reef, when they are fiſhing, or perhaps being too ſlightly covered during night in their own houſes. ARTS AND SCIENCES.

Another diſeaſe was more common among the natives of theſe iſles, which has various degrees and ſtadia, but in its utmoſt height and inveteracy ſeems to be a real kind of *Leproſy*: its ſlighteſt degree, is a kind of ſcaly exfoliation of the ſkin, of a whitiſh, or often a white colour. Sometimes the whole body was covered with it, ſometimes only one leg, ſometimes both or the back only were affected with it; or perhaps only a few detached blotches on the body had this appearance. However we muſt diſtinguiſh from this ſymptom, two other appearances; the one, when we ſaw the bodies of the natives white and covered with a diſagreeable roughneſs; and this being new to us, we imagined it might be ſome diſeaſe, but they ſoon undeceived us, by ſaying it was only ſea ſalt, for the moment before they had been ſwimming in the ſea, which we did not know. The ſecond phænomenon is cauſed by the too frequent uſe of the before-mentioned inebriating liquor prepared from the pepper-root: in this caſe the ſkin looks as if it had been parched and dried by heat and winds, it has a blackiſh appearance, and ſcales are even now and then ſeparated from it. The eyes of people who uſe this liquor too freely are commonly red, inflamed, and ſore, the body grows gradually emaciated, and the inhabitants become ſtupid, infirm,

and:

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and dwindle away. All these symptoms, as we were told, were the consequences of the too immoderate use of the infusion of the pepper-root. But the scales of the morbous exfoliation, are not so harsh to the touch as those caused by sea-water, and there is generally a kind of tumour or swelling under it. In a higher degree of the disease I observed some ulcers in the white blotches, which appeared as if they were extending under the skin, honey-combed, and were running with red orifices surrounded by a red fungous flesh, sometimes between the white spots a livid or reddish hue of the part affected might be observed.

In the second kind or species of this terrible disorder, I saw several roundish or oblong purple elevations on the skin, of the size of a crown piece. Some of them looked as if a part had been rotten, and fallen out and had turned into an ulcer filled with red fungosities. At *E-Aoowe*, or Middleburgh, in the Friendly-isles, a woman was afflicted with this kind, whose face swelled to an extreme degree, was one red, livid, and running sore, the nose was entirely rotten and had dropped off, the cheeks were of a red spungy substance. The eyes sunk deep in the head, red and sore: in a word, she was a most pitiable and miserable object.

I saw still another kind of the same disease, in the same isle of *E-Aoowe*. The back and left shoulder of a man as far as his upper arm was covered with a kind of ulcer, which was a quarter

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of an inch higher than the rest of the body. The whole was of a deep livid red, and the elevated margins towards the extremities were of a nasty yellow colour: it was not a running sore, though it had much the appearance of it. The natives have no peculiar name for this or any other disorders that cause ulcers, pimples, or eruptions, all are promiscuously called *e-pòe* or sores. I observed at *Tabà*, *O-Raiedea*, *Tonga-Tabbu*, and at *New-Caledonia* men with one or both legs enlarged to a monstrous size; the limb was entirely livid and felt hard, and the tumour was confined chiefly to the interval between the knee and instep, though it extended somewhat up the thigh, and even to the toes; however the leg was more swelled in proportion than any other part. Notwithstanding this, I observed the men could walk stoutly, and did not hesitate to wade through the sea-water almost up to their waist, and felt no other inconvenience as far as we could observe, than that they had a difficulty of breathing. This seems to be a kind of elephantiasis, such as some people have in the East Indies on the coast of Malabar. * At New-Caledonia, I saw two men each having an arm enlarged in the same manner. ARTS AND SCIENCES

When

* On sait qu'il y a la maladie appellée *pedes strumosi* parmi les Indiens qui se disent Chrétiens de St. Thomas. *Miscell. Medic. Physic. Decur.* iii. tom. iii. *Observat.* 13. *Sanchez Dissertation sur la maladie Venerienne.*

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When we arrived at O-Taheitee in 1773, we learnt that a Spaniſh ſhip had been there a few months before us, which the natives called *Pabeè no Pèpe* or Pèppe's ſhip. To whoſe commander they gave the name of *t'Errire*; and by this ſhip's crew a diſeaſe had been introduced among them, which they called *è-pæ-nò-pèppe*, Pèppe's diſeaſe or ſore. At the Cape of Good Hope, we heard from Mr. Crozet, Captain of a French Eaſt-India ſhip, and from the officers on board the Frigate Juno, in the Spaniſh ſervice, under the command of Don Juan Arraos, that in the year 1773, Capt. Don Juan de Langara y Huarte had been with two Spaniſh ſhips upon diſcoveries in the South Seas, and had touched at Taheitee. The natives repreſented to us, that the diſeaſe of *o-Pèppe* cauſed ulcers, difficulty of breathing, a falling off of the hair, and laſtly death; and that it had been communicated by co-habitation with women. We ſuſpected this at firſt to be a venereal diſeaſe, but upon a further conſideration, I am apt to believe, that as this Spaniſh ſhip came from Lima and Callao, where a great number of negro ſlaves are kept, who are frequently and chiefly ſubject to the various kinds of leproſis and elephantiaſis, it might perhaps have happened that one or more of the crew might be infected with that kind of elephantiaſis, which they communicated to the natives of theſe iſles: for it is well known, that ſome ſpecies of leproſy may be communicated by cohabitation,

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that many lepers are very immoderate in venery, even a few moments before they expire, and that eſpecially the elephantiaſis deſcribed by Aretæus and Paulus Ægineta, had ſome ſymptoms that are perfectly correſponding with thoſe pointed out by the natives. We could ſee no perſon at the time of our arrival infected with that diſtemper, otherwiſe we ſhould have inquired more accurately into its particular ſymptoms. And I do not intend to be poſitive that the diſeaſe was communicated to the natives by the people in the Spaniſh ſhip; for if an uncommon diſtemper ſhould happen to break out at the time of the arrival, or ſtay of ſome ſtrangers in a country, the ſtrangers have often been accuſed of having given the infection, though they very little deſerved ſuch a charge.

When Captain Cook came in the year 1769, in the Endeavour to O-Taheitee, he found that half his crew when he left the Society-iſles, were infected with the venereal diſeaſe, * and it was then ſuſpected that Mr. Bougainville's ſhip's crew had communicated this diſeaſe. Mr. de Bougainville in his turn ſuſpects the Engliſh in the Dolphin to have firſt introduced it: † and the gentlemen in the Dolphin aſſert they never had one man infected with the leaſt venereal ſymptom whilſt they were at Taheitee or immediately

* See Hawkeſworth, vol. ii. p, 233.

† See Bougainville's Voyage. Engliſh tranſlation, p. 274, and 286.

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afterwards. * When we came to Queen Charlotte's Sound, in New-Zeeland, in 1773, we had been out at ſea for at leaſt five months; none of our ſailors had any ſymptom of this diſeaſe; which could hardly lie dormant for ſuch a length of time; ſince from our leaving the Cape of Good Hope, they had been eating ſalt-meat and ſalt-pork plentifully, had no greens all that time, had indulged freely in the uſe of ſpirituous liquors, and were during the whole of the intermediate time, expoſed to wet and cold, and all the rigours of the climate: circumſtances that would ſoon have accelerated the breaking out of the diſtemper, and rendered it ſo virulent, that they muſt have had recourſe to the aſſiſtance of the ſurgeon: yet, when we went out of Queen Charlotte's Sound, ſix months after leaving the Cape, a midſhipman on board the Adventure diſcovered that he had been infected by one of the New-Zeeland females. In O-Taheitee, and the Society-iſles, we found in 1773, the females communicated this diſeaſe to ſeveral of our people. From the Friendly-iſles no infection was either received or communicated, becauſe the people who laboured under it were not allowed to have any commerce with the females of thoſe iſles. The crew left the Marqueſas and Eaſter-iſland without catching, or communicating the evil, becauſe not a ſingle perſon was

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* Hawkeſworth, vol. i. p. 489, 490.

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was infected with it, either before we viſited thoſe parts, or for ſome time after we had left them. At Taheitee and the Society-iſles, the infection came in 1774 again into our ſhip; and as we ſtaid only a few days at Namocka, I believe none either received or communicated it there. In the more Weſtern Iſles of Mallicollo, Tanna, and New-Caledonia our ſailors had no connection with the females; but in New-Zeeland the diſorder was again communicated to our crew. So that there is great reaſon to believe that the venereal diſeaſe has not been lately introduced into theſe iſles, but was known there for a long time; eſpecially as Ohedeeddee or Mahaine, the young man of Borabora, who went with us in 1773 from O-Raiedea, told us that this evil was very common in Borabora, where however, no European ſhip had ever touched; nay, he informed us that his own mother died of this diſeaſe before the arrival of Europeans in theſe iſles.

It ſeems to me therefore highly probable, that this infectious evil is of ſuch a nature, that by a very libidinous life, and promiſcuous cohabitation of males with females, it may very eaſily be caught; and we are now certain, that there is hardly a country to be found, where the young unmarried females are allowed ſuch a latitude as at O-Taheitee and its neighbourhood in admitting a variety of young males, and abandoning themſelves to various embraces without derogating from their character. Women of all

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ranks follow these practices from the earliest time, and after having passed through the embraces of hundreds, are married to the first people of the isle. It is therefore no wonder, that in a hot climate, in a libidinous nation, inclined to the leprosy and its various branches, a disease should pullulate, which may become contagious only by cohabitation. We had opportunities of observing the most miserable objects in the last stage of this horrid evil. At Huaheine especially, we saw in 1774, a youth with a cadaverous look and complexion, covered with ulcers, especially under the arms, on the groin, and about the genitals, and wherever a congeries of glands is found in the human body. His eyes were almost extinct, his whole frame greatly reduced and emaciated, he dragged after him his languid excruciated limbs, the sad victim of brutal appetite and libidinous desire. *

Besides

* That the venereal disease is by no means to be considered as an evil imported into Europe from America, has been sufficiently proved by Mr. SANCHEZ, a very able and learned physician, (who has been for some time in Russia) in two little Treatises intitled: *Dissertation sur l'origine de la maladie Venerienne*, Paris, 1752, 12mo. *Examen Historique sur l'apparition de la maladie Venerienne en Europe*, Lisbonne, (Paris) 1774. It appears from his inquiries that the venereal disease appeared so early as in March, 1493, in Italy, and in Auvergne in France; at the very time when Christopher Columbus returned to Spain from America; for he landed at Seville, on the 15th of March, 1493, and in the middle of April in the same year he arrived at court, which then resided at Barcelona. From a book of *Peter Pintor*, a Spanish physician it appears, that the venereal disease raged at Rome, in

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Beſides the above-mentioned diſeaſes, *Towha*, then commander of the fleet, and one of the chiefs of Atahooroo, had ſymptoms which every body took for the gout; he was of a ſtrong conſtitution, a corpulent habit of body, and owed this diſeaſe no doubt to intemperance, which is common amongſt the great and wealthy of all nations. I obſerved likewiſe that the natives had frequently a ſty in the eye, and ſome ſymptoms that uſually attend the dropſy; and there may be ſome more diſeaſes known among them, which our

in March, 1493; and it is likewiſe to be collected from other writers, that about that time this evil ſpread all over Italy in the form of an epidemical diſtemper. *Pacificus Maximus*, a poet, whoſe book was printed at Florence, 1489, deſcribes lib. iii. ad priapum, the venereal diſeaſe in ſuch a manner, that no doubt can be entertained of its being known at that period of time. In the church of St. Maria del Popolo, at Rome, is a ſepulcral monument, erected to the memory of Mario Alberti, *qui annum agens* xxx. *peſte inguinaria interiit, Anno.* 1485, about eight years before Chriſtopher Columbus returned from his firſt voyage. (See *Viaggiana, or detached Remarks on the Buildings, Pictures, Statues, Inſcriptions, &c. &c. of antient and modern Rome, London*, 1776.) The Jews who were expelled from Spain, brought the diſeaſe into Africa, according to *Leo Africanus. Deſcriptio Africæ*, lib. i. p. 86. *edit. Elzevir. Lugd. Bat.* 1632. 16° and it was there for that reaſon called *malum Hiſpanicum*, the Spaniſh evil. But *Mariana*, lib. xxxiv. cap. 1. ad annum. 1492. ſays expreſſly, that the order for the expulſion of the Jews from Spain, was given in March, 1492, and only four months were allowed them, ſo that they were probably gone in June 1492, before Chriſtopher Columbus ſailed for the diſcovery of America. Nor are there teſtimonies wanting that in times ſtill more remote, ſymptoms of the venereal diſeaſe were well known: Alfonſus I. King of Naples, died 1458, of the gonorrhœa, or as Triſtano Carracciolo *de Varietate fortunæ*, expreſſes it: *morbo inſuper immundo & pertinaci, involuntario ſcilicet inſenſibilique, ſpermatis fluxu.* Ladiſlas King of Naples, likewiſe died 1414, of an infection in his genitals, commu-

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our ſhort ſtay made it impoſſible for us to diſcover. This however is certain, that though theſe nations are not without diſeaſes, they are upon the whole leſs ſubject to them than the Europeans, and we muſt therefore acknowledge, that they are in that reſpect phyſically happier than more civilized nations, who are generally more ſubject to various diſeaſes.

Though there are among the iſlanders, eſpecially thoſe in the Society-Iſles, men whom they call *Tahouva-mai* *, who are a kind of

communicated to him by a girl, whom he kept, *l'Art de verifier les dates*, page 903. and in *Cardami Chronicle* from 1410 — 1494. More inſtances that the venereal diſeaſe had been known among the antients, are to be found in *Joh. Zach. Platneri Opuſculis Tomo* ii. *Prolusione*, iii. *de morbo Campano*, p. 21. Lipſiæ, 1748, 4to *Petrus Martyr de Angleria* mentions lib. i. epiſt. 67. dated April the 5th, 1489, that Ario Barboſa, profeſſor at Salamanca, was ſeverely afflicted with the *bubas* or *French diſeaſe*. Laſtly from *Muratori's Collectio Scriptorum Hiſtoriæ Italicæ*, tom. xvi. p. 554, 555. it appears from the *Chronicon Placentinum*, that in the year 555, after Chriſt, there was an epidemical peſtilential diſtemper in Italy, which among other ſymptoms had theſe peculiar ones, that the glands began to ſwell to the ſize of a nut, particularly at the parts which modeſty bids to conceal, which ſwelling was followed by an intolerable heat, and that thoſe afflicted with that dreadful evil died in a day or two. All theſe arguments encourage me to ſuppoſe, that the venereal diſeaſe was not uncommon in antient times; that it however, broke out with new rage about the year 1493, and that fixing and attaching itſelf upon many other epidemical diſtempers, it became virulent, by being communicated by cohabiting with women. We need not wonder therefore that the diſeaſe ſhould have made its appearance at Taheitee and its neighbourhood, long before the arrival of Europeans at their iſle.

* The Taheiteans call their prieſts *Tahouva*; pain, a wound, ſoreneſs, or diſeaſe, is called by them *mai* or *mamai*, from theſe two words, the word ſignifying a phyſician or ſurgeon, *Tahouva-*

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of phyſician, yet I could never learn that their knowledge was ſo conſiderable, that they could cure the abovementioned diſeaſes; for generally the natives ingenuouſly confeſs, that there is no *irrepòu*, or remedy againſt them. They have, however, ſome method of curing the venereal diſeaſe; becauſe there is an inſtance of it mentioned in Hawkeſworth's, vol. ii. p. 233, and we were likewiſe told, that they uſed ſome *irrepòu*, or remedy: but either the people to whom we ſpoke, did not know this remedy, and could not therefore inform us of it, or they concealed it from us, as a great and important ſecret, not to be truſted with a ſet of inquiſitive ſtrangers. They certainly uſed a kind of *Stachys*, *(Enèea-rohittee)*; a *Cotula (E-Vàinoo)* with another plant called *Etoòhoo* bruiſed as cataplaſms upon their wounds, though I cannot determine how far thoſe plants may be endued with healing qualities. The general ſobriety of the natives, a ſound conſtitution, and their happy and uniform climate, greatly contribute no doubt towards healing their wounds; ſo that the efficacy of their remedies cannot as yet be fairly decided, as a ſet of experiments muſt be tried in order to aſcertain their virtue. I

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Tabouva-mai is compounded; as if the people meant to intimate that their phyſicians are in their opinion a kind of prieſts. And I am inclined to believe that their phyſicians employ in ſome inſtances charms or incantations, prayers or ceremonies againſt the diſeaſe. See Hawkeſworth, vol. ii. p. 231, 232.

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am however inclined to believe that they have among themſelves ſome traditional knowledge of treating wounds by applying cataplaſms of bruiſed plants; this knowledge is perhaps conſiderably inferior to that of the ſons of Æſculapius, who, in the Trojan war, aſſiſted the wounded Grecian heroes with their remedies, and whoſe ſcience was confined, it ſeems, to a few plaiſters and chirurgical operations. The ſcars of wounds which we ſaw, were not all proofs of an equal ſucceſs in their art. Some were really well healed, and others had large elevated ſeams. However, there were unqueſtionable inſtances of their ſkill and ſucceſs in healing wounds. *O-Rettee* the chief of *O-Hiddea*, and the friend of Mr. de Bougainville, had on the ſide of his forehead, an impreſſion on the ſkull made by a large ſtone, of ſuch a ſize, that a man's hand might be laid in it; and yet there were no viſible ſcars of ſo dangerous a wound.

In the friendly iſles we obſerved, that the greater part of the nation, had on each cheek-bone a ſpot, which in ſome only appeared to be of a different colour of the ſkin, in others we ſaw theſe round ſpots covered with a freſh ſcurf, and again in others they were quite red and wounded, as if they had been cauſed by ſome exulcerating plants, or by burning on it ſome ſubſtance ſimilar to the *Moxa* of the Japaneſe, * and the natives intimated to us that it was done on account

* All the Oriental phyſicians uſe ſome cauteries againſt diſeaſes. The Arabs burn a cylinder of blue cotton cloth on the part affected by pain. The Indians and Malays, uſe various

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account of a cold or pain in the eyes; however we had neither time nor opportunity to learn from them in what manner theſe round ſpots were produced. ARTS AND SCIENCES

The *Tahouva-mai*, or phyſician, is not only verſed in the ſcience of remedies againſt the diſeaſes common among theſe iſlanders, but he has really a knowledge of nature, as far as is compatible with the confined ideas of the whole nation. I cannot but imagine that they muſt have ſome ideas of ANATOMY, as they are well acquainted with all the internal parts of the human body, which they could not have learnt but by examining ſome human corpſe; and they have likewiſe peculiar names for all the internal parts of the body: thus for inſtance, they name *Roro* the brains; *o-hoòttoo* the heart; *paràïa* the liver; *hoòa-hoùa* the kidneys; *opoò-orahài* the ſtomach; *aòu* the bowels; *oboòboo* the bladder; *pow-olxòre* the blind gut; *àòva* the womb or matrix; and

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various ſubſtances for cauteries applied on diſeaſed parts of the body, the moſt common of which is the pith of ruſhes, dipt in Seſam-oil. The Chineſe and Japaneſe uſe the downy part collected from the young leaves of the common mugwort (*Artemiſia vulgaris*) form a little cone of it, put it on the body and burn it. This remedy has been recommended and uſed by ſome Dutch phyſicians againſt the gout and rheumatiſms, but has hitherto gained but an indifferent reputation. The Laplanders uſe the common punk or *boletus igniarius* for the ſame purpoſe: *Knud Leem's Deſcription of the Laplanders*. The Bedwin-Arabs ſubſtitute common cotton. *D'Arvieux Voyage dans la Paleſtine*; which is likewiſe found by experiment to be as good as the

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toa-houwa the cawl or omentum. Besides they know all the plants and animals that are to be found in their isles, or in the seas surrounding them, and have peculiar names for distinguishing them: nay, they seem to have examined the nature of each plant, and animal, since the name often expresses a peculiar quality of the plant or animal. Thus for instance, there is at Taheitee a kind of *Loranthus*, which, like all the plants of this genus, grows on the branches and stems of other trees, like the *misletoe*; and which probably is disseminated and propagated in the same manner, the seeds being first eaten by birds, and then voided on the branch of a tree, whereon they germinate and grow: this plant the natives call *toote-oopa*, dove's dung, from a kind of dove, *(oo-oòpa)* which is particularly fond of the seeds of this loranthus. There is a new species of *phyllanthus*, whose leaves shut up during night, which might not improperly be called the *sleeping* of the plant, and the natives have been shrewd enough to catch this little circumstance, and to call the plant from thence, *moë-moë*, *sleepy*:

Linnæus

the *moxa* by *Leeuwenhoek*. See *Rob. Hook's Philosophical Experiments and Observations*, p. 73. The rest of the authors who have written on the *moxa* are *Valentinus Epistola ad Cleyerum*, in the Acta. Nat. Cur. *Kæmpfer* in his *Amœnitates Exoticæ* p. 589. seq. and in the History of Japan, vol. ii. appendix p. 37. Lastly, *Petrus Jonas Berger Materia Medica e regno Vegetabili*, p. 673.

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Linnæus has obſerved this property in many plants, and calls it their *ſleep*. The *Caſuarina equiſetifolia* affords a very hard and ponderous wood, of which the natives make the clubs uſed in war, and as war is called in their language *tòa*, they have adopted the name of *e-tòa*, for the tree. The ſeeds of the *urena lobata* have the ſame quality as the burdock buttons in our country, ſticking to peoples cloaths; and as the word *pìrree* has the ſignification of glueing or joining faſt together, they call the plant *pìrree-pìrree*. All theſe circumſtances, ſeem to prove the ſagacity and the ſpirit of obſervation of this people, who have inveſtigated very carefully all the plants of their country, and attended to their various qualities, which they have preſerved in the very name of the plant. Nor has their ſpirit of obſervation been wanting in diſtinguiſhing the various parts of plants: thus for inſtance the roots are called *èä*; *toòmoo* is the part of the ſtem within the ground, *(caudex intra terram)* and *e-ra-où* is the name for the ſtem above ground; the branches are called *àma*, the leaves *eloù*, the middle ſhoot *amòu*, the flower *teàrre*, the fruit *loòerro*. What made me moſt attentive to theſe trifles are the names *orèe* for the ſpatha of the flowers of the coco-nut, and that of *te-pevaye*, ſignifying the bracteal leaves of a plant; which nice diſtinctions certainly prove a particular attention in diſcriminating theſe parts from the reſt in a plant, and that they had in a manner, made botany their particular ſtudy; in which

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opinion we often were confirmed, when they pointed out to us, the differences in the ſpecies of plants; by the variety of flowers, the ſhape of the leaves, &c. &c. *

From the above obſervations we learn, that on account of wounds and diſeaſes, mankind was firſt led to ſeek after remedies, by the examination of plants; and by attending more accurately to the parts affected by pain, to enquire into the interior ſtructure of the human body. The want of happineſs and enjoyment, prompted man to exert his induſtry and talents, in order to find out the means of reſtoring the loſs of health and ſtrength. The conſciouſneſs of his own weakneſs, rouzed him from his original indolence, and ſpurred him on to the exertion of induſtry, to the examination and ſtudy of himſelf, and the objects ſurrounding him, and to ſeek for aſſiſtance in that very nature, of which he himſelf conſtitutes ſo conſiderable a part.

The preſervation of the memory of tranſactions and men is not quite neglected in Taheitee; for they are able to give a good account of the things which happened in their iſle; but this can only be ſaid of the moſt recent tranſactions; for as they take no care to number their own years, they likewiſe are unable to ſay how long it is ſince an accident happened; all that they can do is to ſay that ſuch a thing happened in my grand-father's, or great

* They are likwiſe acquainted with the ſexual ſyſtem, eſpecially in the coco-palm.

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great grand-father's time. The remarkable events, and the names of perſons whoſe memory is deemed worth preſerving, are recorded in verſes of their own making, and occaſionally ſung, which form the rude annals of their HISTORY. In this reſpect, the Taheiteans are ſimilar to all other nations, who have not the art of writing, or of perpetuating their ideas, the deeds of their great men, and the remarkable events which happen among them. ARTS AND SCIENCES

The next branches of ſcience, of which the inhabitants of Taheitee and its neighbourhood have ſome knowledge, are ASTRONOMY, GEOGRAPHY, and NAVIGATION. I mention theſe three ſciences purpoſely together, as they are cloſely connected, and as the knowledge of the two firſt has been made ſubſervient to the laſt; and I believe likewiſe, that by their navigation they learnt ſo much of geography as they are acquainted with, and perhaps would not have attempted to obſerve the heavens, had it not been for the ſingle purpoſe of directing them in their navigations to remote parts. So that neceſſity, not mere curioſity only, led them to the obſervation of the heavens. For as they are obliged to go now and then to the neighbouring iſles, it often happens that a ſtorm ſurprizes them at ſea, and drives them far from their intended courſe, and ſeparates them from their home, which they never would ſee again, had they not acquired ſome knowledge

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of the motion of the heavenly bodies. Thoſe men among theſe iſlanders, who had acquired ſome ideas of the heavens, by neceſſity and a long experience, communicated them to the riſing generation, in order to enable them to profit by their toils, and the ſtudy of many a night paſſed without ſleep. Finding by cruel neceſſity that in an open ſea nothing could guide them, but thoſe luminaries which we ſee in the day, or which give their light to us in the night; they attended to the immenſe number of ſtars ſpread all over the firmament, ſome of which they ſoon diſcovered to have a motion peculiar to themſelves, to deſcribe again the ſame rounds which they had compleated before, and to perform their revolutions in different and ſtated periods of time, while the reſt preſerved invariably the ſame diſtance from one another.

The ſky in this country is commonly clear and ſerene, and on a few days only in the whole year, is covered with clouds; ſo that the natives of the tropical iſles have frequent opportunities of contemplating the heavens, and admiring during night the brilliancy of the ſtars. After the darkneſs of the night is over, they do not enjoy ſo long a twilight as we do; but the ſun darts out at once as it were in full ſplendor from under the horizon, and ſhines with uncommon brightneſs and power, till he again ſets on the oppoſite part of the horizon, when in a few minutes night ſpreads her ſable hues over all the objects ſurrounding the happy natives

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of these isles. It must have been obvious to each beholder, that the sun rises and sets at certain times in points of the horizon diametrically opposite to one another, and at others, in points not much deviating from those situated either on one or the other side of them, for the whole difference cannot exceed fifty degrees. These regions of the horizon, are equally remarkable for the rising and setting of the moon nearly within the same space, and soon after they must likewise have found that five stars, (the greater part of which equalled or surpassed even the largest stars in apparent magnitude) rose and set within the same space of the horizon. This was sufficient to induce them to call that part of the heavens by a peculiar name. The place where the sun rises they called *Tatabeìta*, and the place where he sets *Topa-t-erà*. They likewise found, that the sun from the time of rising came nearer and nearer to the zenith, that he removed farther and farther from that point till his setting, and that at certain times he was perpendicular over their heads; the line whereon the sun comes nearest to their zenith and upon it or the meridian, they call *T-erà-whattèa*. The Northern point of this imaginary line on the horizon, they name *Too-eroà*, and the opposite point *Toà*. They have likewise names for several points between these cardinal ones, which I heard mentioned, but I was not able exactly to determine either the number or the direction of them. If I am not mistaken, the whole

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whole horizon is divided into twelve points, ſo that two points would fall between two cardinals.

The natives of theſe iſles could not help obſerving, that the bread fruit, their chief ſubſiſtence, grows but once during twelve months or revolutions of the moon; for during the ſpace of ſeven months this fruit is gathered in abundance on the trees that bear it, but during five months they find none. This circumſtance very naturally muſt lead them to inveſtigate the true cauſe of it, the revolution of the ſun. At the ſolſtice in December, the ſun is in its meridian altitude beyond the iſle, towards the South of it, and in the ſolſtice in June, he is in the Northern Hemiſphere, and therefore paſſes twice a year through the zenith. About two months before and after the time of the ſuns reaching the Southern tropic, bread-fruit is very ſcarce, and during the ſeaſon from Auguſt to March, this fruit is very plentiful, being ripe in March or the beginning of April, and this laſt ſeaſon they call *Pa-ōōroo*, from the name of bread-fruit. The mildneſs of the climate however is ſuch, that there is always a tree here and there, which from its peculiar ſituation in a valley more elevated than the plain ſurrounding the iſle, or from its expoſure on the Southern ſide of a high hill, bears fruit at a time when the generality of trees of this kind have none; and it is from theſe trees that their chiefs and better ſort of people have a conſtant ſucceſſion of freſh bread-fruit,

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fruit, at a time when the reſt of the people are obliged to live upon horſe-plantanes, the fruit of the Ratta-tree, *(Inocarpus edulis)* the roots of eddoes, or the *Arum eſculentum* and *macrorhizon*, and thoſe of yams or *Dioſcorea alata* and *oppoſitifolia*; or they then chiefly uſe the *Mahèe* or four-paſte prepared from fermented ripe bread-fruit. *

The whole of the bread-fruit ſeaſon, including the time when they have none, is called *Tàoo*, and is therefore anſwerable to a year. They count the revolutions of the moon, and call them by the ſame name as the moon *Marama* or *Malama*. They enumerated to me thirteen names of moons or lunations, and then ſaid *Hàre-te-tàoo*, the year is gone; and added ſtill *Oomànnoo*, often, often, many times; which ſeemed to imply, that the cycle of the lunations is to be repeated every year. They begin the year about March, when they likewiſe begin to make their bread-fruit four-paſte or *Mahèe*, for which purpoſe immenſe quantities of the fruit are plucked off, which naturally creates ſome ſcarcity of this their chief aliment, and muſt increaſe the ſame in proportion as the ſeaſon advances. I cannot, from the mere enumeration of the thirteen names of months, prevail on myſelf to think that their year has thirteen lunations, but rather ſuppoſe that they have

* The deſcription of the operations neceſſary for this purpoſe, is given in Hawkeſworth, vol. ii. p. 198, 199.

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but twelve lunations, and now and then intercalate a thirteenth month, in order to keep the ſolar and lunar year in harmony; how often they do this, I pretend not to ſay. The names of the months are ſubjoined for the ſatisfaction of my readers.

1.	O-porore-o-moòa. *	March.
2.	O-porore-o-moòree.	April.
3.	Moorehà.	May.
4.	Oohee-èlya.	June.
5.	Hooree-àma. (owhisree-àma)	July.
6.	Tàowa.	Auguſt.
7.	Hooree-erre-èrre. (owhirree-erre-èrre)	September.
8.	O-Te-àree	October.
9.	O-Te-tai.	November.
10.	Warehoo. (Owarahew. Hawkeſworth, v. ii. p. 168)	December.
11.	Wæ-ahou.	January.
12.	Pipìrree.	February.
13.	A-oo-noonoo.	

Each

* Some of the months have names, whoſe ſignification is known; of the reſt I can give no account. 1 *Oporore-o-moòa*, ſignifies the *firſt hunger* or *want*; 2 *Oporore-o-moòree* has the ſignification of the *laſt hunger*; the foregoing obſervation on the ſcarcity of the bread-fruit about the time of its maturity, when it is plucked in quantities for making the *mabee* or four-paſte, may in ſome meaſure account for the names of theſe two months. The

fourth

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Each month contains according to the account given to me, twenty nine days, which approaches nearly to the real length of a lunation. If their year has but twelve months, it contains only 348 days; but if the thirteenth be added, it consists of 377 days; in the first case, the year is 17 days too short, and in the second, it exceeds the solar year by twelve days. This circumstance leads me to suspect, that they have some method of harmonizing the solar and lunar year unknown to us. What is more remarkable, I found that every one of the 29 days of the month has a peculiar name, which they have in common with the Persians, who appropriate to each day of the month a particular name. Their month begins from the first appearance of the new moon, and after the 28th and 29th day of the month, they added that the moon was dead, *màrama-màtte*, which proves that their months by no means consist exactly of 29 days; but that they contain sometimes 30, and sometimes 29 days only, according as the new moon makes her appearance sooner or later: for if they reckon

fourth month *Oobee-eiya* has certainly a reference to *angling for fish*. The eighth month *O-Te-dree*, is thus called from the *young coco-nuts*, which probably are then most plentiful. The ninth month *O-Te-tat*, alludes to the *sea*. The eleventh *Wæ-àbou*, to their *cloth*, and the twelfth *Pipirree*, to some *covetousness* or *scantiness*, perhaps in food. The words included in *parentheses* are the various readings of the name, having heard it pronounced by another person in a different manner.

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exactly 29 days for a month, they would soon fall short of the new-moon, and then it could not be with propriety said of the two last days of the month, *màrama-màtte*, the moon is dead; by which expression they intend to say, that during these two days, the moon cannot be seen. Though I could not learn the meaning of any of the names of the days of the month, I will however give them here for the gratification of my readers.

1. Tirrèo.
2. Tirrohìddee. (*Hoee-rohiddee*)*
3. O-hàtta. (*Ha-òtta*)
4. Ammee-àmma.
5. Ammee-àmma-hòy.(*whaòttee*)
6. Orre-òrre.
7. Orre-òrre-hòy. (*ròtto*)
8. Tamatèa.
9. Hoòna.
10. Oràboo.
11. Mahàrroo.
12. Ohoòa.
13. Mahìddoo.
14. Ohòddoo. (*owhòddoo*)
15. Maràì.
16. Otoòroo.
17. Ra-òu.
18. Ra-òu-hòy. (*rotto*)
19. Ra-òu hàddee. (*whàddee*)
20. Ororo-tài. (*tahài*)
21. Ororo-ròtto.
22. Ororo-hàddee. (*whaddee*)
22. Tarròa-tahài.
24. Tarròa-ròtto.
25. Tarròa-hàddie. (*whàddee*)
26. Tàne.
27. Oro-mòoa.
28. Oro-mòoree.
29. Omoòddoo. } (*màtte màrama.*)

Each

* The names included in parentheſiſes are the various readings of the preceding name.

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Each day is divided into ſix hours, and the night into the ſame number; which they can gueſs at very nearly during the day, by the height of the ſun: but few can gueſs at theſe diviſions by the heighth of the ſtars during night. Theſe hours, which anſwer to two of ours, have peculiar names, and are in length ſimilar to the hours of the Chineſe. Some of them only I could learn: they call midnight *Otoo-rahai-pò*; from midnight towards day-break is *Oetaí yàow*; day-break is named *Ootaatahèita*; and ſun riſe *Erà-oodo*; when the ſun grows hot, the time is called *Erà-t-oowèrra*; when he is in the meridian, they ſay *Erà-t-ooawatèa*; the part of the evening before ſunſetting they name *ooahcihei*; and after ſunſet, *Erà-oo-opò*.

Theſe diviſions of time enable theſe iſlanders to obſerve the heavenly bodies with greater accuracy for their ſeveral purpoſes. They know that the fixed ſtars do not change their poſition in regard to one another, and have by long experience diſcovered which ſtars riſe and ſet at certain ſeaſons of the year; and by their help they determine the progreſſive motion of the planets, and the points of the compaſs during night. *Tupaia* was ſo well ſkilled in this, that wherever they came with the ſhip during the navigation of nearly a year, previous to the arrival of the Endeavour at Batavia, he could always point out the direction in which Taheitee was ſituated.

This

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This attention to the great luminaries and the ſtars, rendered it neceſſary to diſtinguiſh each of them by a peculiar name. The ſun has the name of *Erà*, and the moon that of *Màrama*, the planet Venus is called *Touroà*, Jupiter *Matàree*, and Saturn *Na-ta-heà*. The ſeven ſtars have the name of *E-whettoo-owhàa*,* Sirius or the Dog-ſtar *Ta-whettoo-roà*; the ſtars forming the belt of Orion are named *E-whettoo-mahòo*; the milky way is known by the denomination of *T-èiya*, and a comet or blazing ſtar by that of *E-whettoo-wèrra*; the natives have alſo a name for a ſhooting ſtar and call it *Epào*, and think that it is an evil genius paſſing rapidly through the heavens. They are doubtleſs acquainted with other ſtars, than thoſe here enumerated, and by their riſing or ſetting are enabled to judge of the time of the night, and likewiſe of the points of the heavens though they have no compaſs. It is very well known that their imperfect aſtronomical knowledge is only applicable to the parts of the world which are near to O-Taheitee, as the appearances would

* To give the literal ſignification of the names of all the ſtars, is a taſk too difficult for the imperfect knowledge of the Taheitean language I am maſter of, however I'll give here the interpretation of ſuch names as are obvious to me. The ſeven ſtars are called *E-whettoo-owhad*, or the *ſtars of the neſt*; probably the natives abſtracted from the poſition of the ſtars, the figure of a bird's neſt. The Dog-ſtar *Ta-whettoo rod* is the *great ſtar*, and this name is very properly given. The milky way or *T'èiya* ſeems to ſignify a *ſail*. A comet or *E-whettoo-wèrra* ſignifies the *burning ſtar*.

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would be greatly altered at a moderate distance from their isle, and be of no further use to them. We found however upon examination, that this moderate share of astronomy and the slightness of their embarkations did not hinder them from acquiring a very extensive knowledge of the islands in the neighbourhood. TUPAYA the most intelligent man that ever was met with by any European navigator in these isles, had himself been ten or twelve days sail to the Westward of *O-Raiedea*; which according to Capt. Cook's computation, * would make 400 leagues, or about twenty degrees of longitude. This man when on board the Endeavour, gave an account of his navigations and mentioned the names of more than eighty isles which he knew, together with their size and situation, the greater part of which he had visited, and having soon perceived the meaning and use of charts, he gave directions for making one according to his account, and always pointed to the part of the heavens, where each isle was situated, mentioning at the same time that it was either larger or smaller than Taheitee, and likewise whether it was high or low, whether it was peopled or not, adding now and then some curious accounts relative to some of them. Of this chart a copy was obligingly communicated to me by Mr. Pickersgill, Lieutenant

* Hawkesworth, vol. ii. p. 278.

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Lieutenant on board the Reſolution, and who had been before twice at Taheitee, in the Endeavour, and in the Dolphin. Captain Cook was pleaſed alſo to communicate to me, two catalogues of ſuch iſles as he had heard named in his firſt voyage at Taheitee, and from Tupaya; I met with another copy of the chart, drawn after Tupaya's direction, in the poſſeſſion of Joſeph Banks, Eſq. who, with great politeneſs and well known readineſs to promote whatever has a tendency to become ſubſervient to ſcience, permitted me to take a copy of it. I remarked that the charts both agreed in general, and that the catalogues contained all the names which were found on the charts, and ſome few more, not inſerted in them. I collected likewiſe many names and accounts of iſlands, when we were at Taheitee and the Society Iſles. Some of the names were ſtrangely ſpelt, as there never were two perſons, in the laſt and former voyages, who ſpelt the ſame name in the ſame manner; it muſt therefore happen, that ſome of the names ſeemed to be different; though upon a more critical examination, I found them to agree better than might at firſt ſight have been expected: this chart I have cauſed to be engraved as a monument of the ingenuity and geographical knowledge of the people in the Society Iſles, and of Tupaya in particular: the iſles are all numbered, that I might have an opportunity of referring to theſe numbers, and to add a few remarks, which may be thought neceſſary for illuſtration. The

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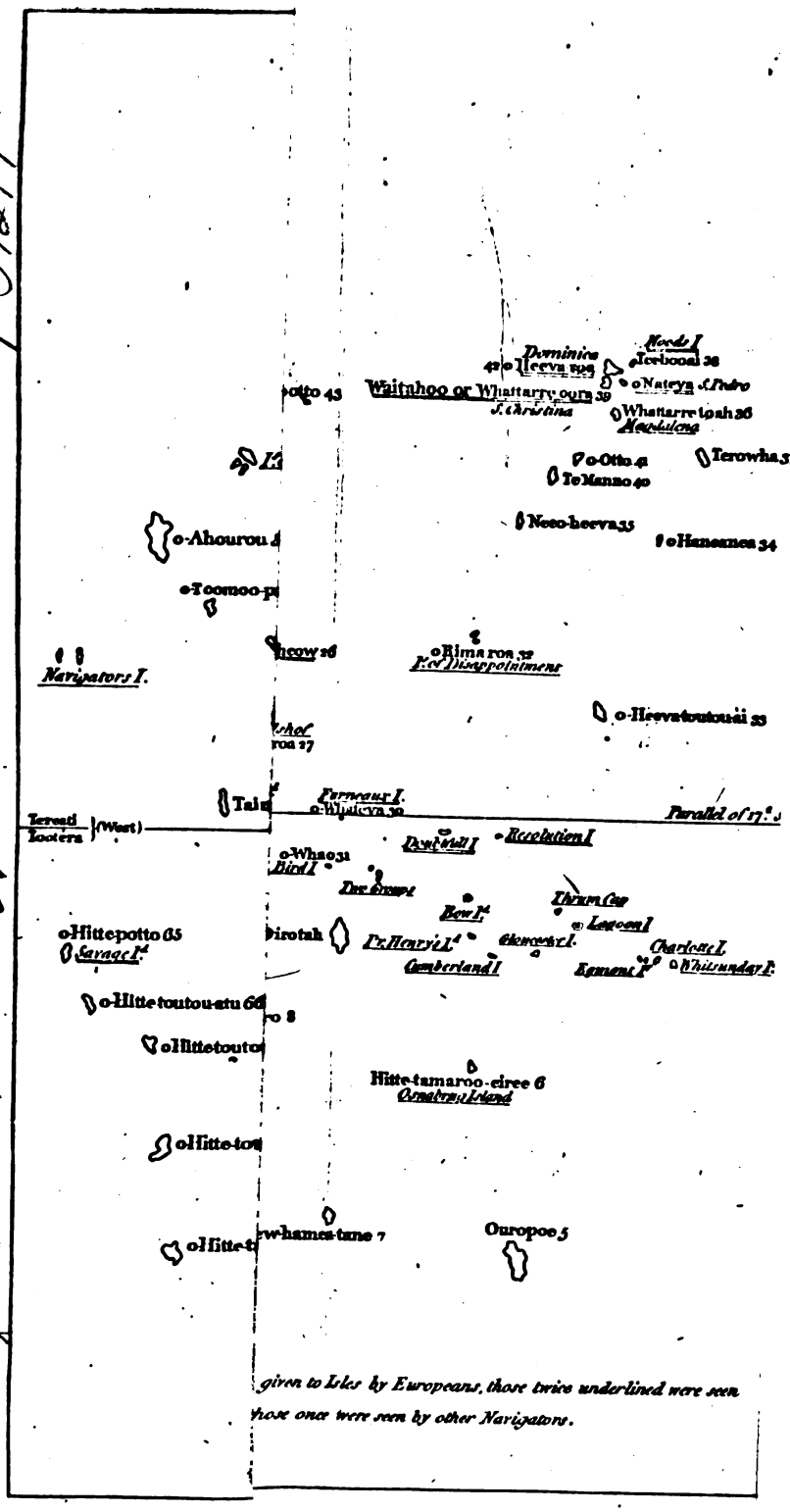

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names themſelves are ſpelt as I found them either in one of the catalogues, or the charts, or in my own regiſter of obſervations, a preference being given to the beſt authority, and to the analogy of the language ſpoken in theſe iſles. The chart includes about 20 degrees of longitude on either ſide of the meridian of 150 degrees Weſt from Greenwich, or 40 degrees in all, and about 20 degrees of South latitude from about 7 degrees to 27 degrees; the parallel of 17 degrees running in the middle. It cannot be expected that this chart ſhould be of ſuch accuracy as to enable future navigators to make uſe of it: it is chiefly intended to give ſome idea of the geography of the inhabitants of the iſles in the South Sea, and it will likewiſe ſerve to make every navigator cautious when he arrives at that part of the ocean comprehended in this chart; and probably may be the means of aſcertaining the ſituation of theſe numerous and partly undiſcovered iſles.

1. O-TAHEITEE, called by Capt. Wallis *King George's Iſland*, and by Mr. de Bougainville *Taïti*. Tupaya mentioned that in the life time of his great grandfather *(Medoòa no the Tooboòna)* a hoſtile ſhip *(Pahee-tòa)* had been there. And it is very probable, that PEDRO FERNANDEZ DE QUIROS was in the year 1606, its firſt diſcoverer, who called it *Sagittaria*, according to the ingenious conjecture of Mr. Dalrymple in his *letter to Dr. Hawkeſworth*, p. 17, and though

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this opinion has very lately been attacked; I am ſtill of opinion, that Mr. Dalrymple's conjecture has not been invalidated by the ſhew of arguments oppoſed to it. It is about thirty leagues in circumference, and both Peninſulas are high land, which, eſpecially in the Eaſternmoſt is extremely ſpiry, and has the ſtrongeſt marks of being the work of a violent earthquake and ſubterraneous fire.

2. MÆATÈA, was called *Oſnabruck Iſland* by Captain Wallis, and *Pic de la Boudeuſe* or *Boudoir* by Mr. de Bougainville. If the conjecture of Taheitee being Sagittaria is right, *Mæatea* muſt be *Dezena*, ſeen by Quiros February the 9th, 1606. It is about four or five miles in circuit, is high land, and the ſummit of the hill has the appearance of being excavated, as if formerly there had been a volcano, whoſe crater is now filled up.

3. O-HEEVA-NOÒE, an iſle to the Eaſtward of O-Taheitee, ſeems to be the ſame which Captain Cook called *Chain Iſland* in 1769; being a chain of low iſlands connected by reefs into an oval ſhape, about five leagues in length.

4. OIRÒTAH, is an iſland larger than Taheitee, inhabited.

5. OUROPÒË, likewiſe inhabited, and larger than Taheitee.

6. O-HIT-

6. O-HITTE-TAMARO-EÏREE, ſeems to be *Oſnabruck Iſland*, ſeen by Captain Carteret in the year 1767, is low land, and probably not inhabited.

7. TE-NEWHAMMÈA-TÀNE, a low iſland.

8. TOÒMETO-ROÀRO, ſeems to be the cluſter of low iſlands, ſeen likewiſe by Captain Carteret, and called by him the *Duke of Glouceſter's Iſlands*.

9. MOUTOÙ, is larger than Taheitee and the Southernmoſt iſland, which Tupaya had ſeen; though his father had told him there were iſlands to the Southward of it.

10. MANNÙA is a high iſland, peopled by ferocious inhabitants, with wild and furious looks, and eating men, but having very little ſhipping: its ſituation is to the North Eaſt of *O-Hitte-roa*.

11. EÏTO-NOÒE.

12. O-HITTE-RÒA a high iſland, ſeen by Captain Cook in 1769.

13. TABBU-A-MÀNNOO, a ſmall high iſland to the Weſt of O-Taheitee, ſeen by Captain Wallis, and called *Sir Charles Saunders's Iſland*. Mr. de Bougainville heard of it, and calls it *Tapoua maſſou*. It is about ſix miles long. The Chief of this iſland in 1774, was called OÒPA.

14. EÏMÈO, is high land, and was called *York Iſland* by Captain Wallis in 1767. Mr. de Bougainville named it *Aimeo*: It belongs to Taheitee.

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15. HUAHÈINE is a high iſland, ſeen firſt by Captain Cook, its Chief in 1774 was OREE.

16. EA-WATTÈA, in the middle of the chart, is the name of the Meridian-Line.

17. O-RAIETÈA is a high iſland, ſeen firſt by Captain Cook; Mr. de Bougainville had heard of it, and calls it *Aiatea*. It was conquered by OPÙNEE chief or king of *Borabòra*, and the conquered chief is called Oo-oòroo: Tupaya ſaid that in his grandfather's time a friendly ſhip had been there, of which we have no account in Europe, unleſs one of the ſhips of Roggewein came near this iſland.

18. O-TAHÀ is a high iſland, ſeen firſt by Captain Cook, and likewiſe conquered by OPÙNEE, the joint chiefs of it were OTÀ and BÒBA, Mr. de Bougainville ſeems to have heard of it, and called it *Otaa*.

19. BORABÒRA or BOLABÒLA is a high iſland, governed by OPÙNEE. Captain Cook ſaw it firſt, and it ſeems Mr. de Bougainville had heard ſomething of it and called it *Papara*.

20. TOOPÀI is a low iſland, uninhabited, reſorted to by the inhabitants of Borabòra for the purpoſes of fiſhing and fowling: ſometimes the inhabitants of an iſland called *Papàä* frequent it.

21. Mou-

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21. MOUROÒA is a high iſland, under the dominion of OPÙNEE, firſt ſeen by Captain Cook. Mr. de Bougainville probably heard of it, and names it *Toomaraa*.

22. O-ÀNNA is a low iſland, on which a ſhip was wrecked, and ſome men periſhed, according to Tupaya's account: it ſeems to be the ſame which Admiral Byron called *Prince of Wales's Iſland*; for though ſome iron and braſs, with the head of a rudder of a Dutch longboat, were found at *King George's Iſland*, it could not be the iſland on which the ſhip was loſt; for the deſcription and ſituation prove King George's Iſland to be (26) *Teokèa*; and the parts of the ſhip found there, might have been carried from *O-ànna*. The ſhip loſt here, may, with great probability, be ſuppoſed to be the *African Galley*, one of Roggewein's ſquadron, which was wrecked upon an iſland, called, for that reaſon, *Pernicious Iſland*.

23. O-MATÈIVA, or O-MÀTÉÀ is a low iſland to the North Eaſt of *Raietèa*, and to the North Weſt of Taheitee: a boat with three men and a woman, arrived from thence, ſome months before us, at Huaheine, where I ſaw the boat, ſimilar to thoſe at *Teokèa*, and the men were tattowed all over their faces and arms.

24. O-WAHÈI ſeems to anſwer to *Waterland*, firſt ſeen by Schouten and Le Maire, in 1616. It is low land.

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25. OURA, and

26. TEOHEOW or TEOKÈA, two low iſlands, at a few miles diſtance from one another, were ſeen by Admiral Byron, in 1765, and called *George's Iſlands*; we landed, in 1774, on the latter iſland, and learnt the true name of this iſland from the natives, who called it *Teoukea* or *Teokèa*. On this iſland Mr. Byron found the carved head of a rudder, probably belonging to a Dutch long-boat, a piece of hammered iron, a piece of braſs, and ſome ſmall iron tools. He ſeems to indicate, "that in caſe the ſhip to which the long-boat "belonged, ſailed from this place in ſafety, it would not "be eaſy to account for her leaving the rudder of her long-"boat behind; and if ſhe was cut off by the natives, there "muſt be much more conſiderable remains of her in the "iſland, eſpecially of her iron work, upon which all Indian "nations, who have no metal, ſet the higheſt value." Theſe arguments ſeem to be very juſt, for the ſhip was loſt on (22) *O-ànna*, the iſland before mentioned, and theſe trifles of iron and braſs, were obtained by the inhabitants of *Teokèa*, either by trading with thoſe at *O-ànna*, or as preſents to the chiefs: for this is very cuſtomary in all theſe iſlands; thus for inſtance *Opùnee* chief of Borabòra,

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obtained one of Mr. de Bougainville's loſt anchors, as a preſent from *Tootaha*, the chief of Taheitee.

27. O-RAI-RÒA ſeems to be the iſland of *Carlshof* diſcovered in 1722 by Roggewein.

28. O-T'AH correſponds in ſome meaſure with the ſituation of *Adventure's* Iſland ſeen by us in 1773.

29. O-PATÀI or OO-PATI, anſwers to the ſituation of the group of iſlands called by Captain Cook *Palliſer's Iſlands*, in 1774.

30. O-WHARÈVA is probably the *Iſle of Furneaux*, called thus by us in 1773.

31. O-WHÀO, muſt in all probability be the *Iſland of Birds*, diſcovered by Captain Cook in 1769.

32. O-RIMA-RÒA coincides nearly with the ſituation of the *Iſles of Diſappointment*, ſeen by Admiral Byron in 1765.

33. O-HÈEVA-TOUTOU-ÀI, to this iſland *Tupaya* added the following remark, "that the inhabitants are men-eaters, "that their ſhips are large, and that the ſhip from Britain "(the Endeavour) was but little in compariſon."

34. HANEANÈA is a ſmall iſland.

35. NEEO-HEÈVA is likewiſe ſmall.

36. WHATTÈRRE-TOÀ, ſeems to be *la Magdalena* diſcovered by *Mendaña*, 1595.

37. TERO-

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25. OURA, and

26. TEOHEOW or TEOKÈA, two low islands, at a few miles distance from one another, were seen by Admiral Byron, in 1765, and called *George's Islands*; we landed, in 1774, on the latter island, and learnt the true name of this island from the natives, who called it *Teoukea* or *Teokèa*. On this island Mr. Byron found the carved head of a rudder, probably belonging to a Dutch long-boat, a piece of hammered iron, a piece of brass, and some small iron tools. He seems to indicate, "that in case the ship to which the long-boat "belonged, sailed from this place in safety, it would not "be easy to account for her leaving the rudder of her long-"boat behind; and if she was cut off by the natives, there "must be much more considerable remains of her in the "island, especially of her iron work, upon which all Indian "nations, who have no metal, set the highest value." These arguments seem to be very just, for the ship was lost on (22) *O-ànna*, the island before mentioned, and these trifles of iron and brass, were obtained by the inhabitants of *Teokèa*, either by trading with those at *O-ànna*, or as presents to the chiefs: for this is very customary in all these islands; thus for instance *Opùnee* chief of Borabòra,

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obtained one of Mr. de Bougainville's loſt anchors, as a preſent from *Tootaba*, the chief of Taheitee.

27. O-RAI-RÒA ſeems to be the iſland of *Carlshof* diſcovered in 1722 by Roggewein.

28. O-T'AH correſponds in ſome meaſure with the ſituation of *Adventure's* Iſland ſeen by us in 1773.

29. O-PATÀI or OO-PATI, anſwers to the ſituation of the group of iſlands called by Captain Cook *Palliſer's Iſlands*, in 1774.

30. O-WHARÈVA is probably the *Iſle of Furneaux*, called thus by us in 1773.

31. O-WHÀO, muſt in all probability be the *Iſland of Birds*, diſcovered by Captain Cook in 1769.

32. O-RIMA-RÒA coincides nearly with the ſituation of the *Iſles of Diſappointment*, ſeen by Admiral Byron in 1765.

33. O-HÈEVA-TOUTOU-ÀI, to this iſland *Tupaya* added the following remark, "that the inhabitants are men-eaters, "that their ſhips are large, and that the ſhip from Britain "(the Endeavour) was but little in compariſon."

34. HANEANÈA is a ſmall iſland.

35. NEEO-HEÈVA is likewiſe ſmall.

36. WHATTÈRRE-TOÀ, ſeems to be *la Magdalena* diſcovered by *Mendaña*, 1595.

37. TERO-

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37. TEROWHÀ.

38. TEEBOOAI is from its ſituation very probably *Hood's Iſland* one of the *Marqueſas*.

39. WHATÀRRE-OÒRA. In Mr. Banks's chart I find the name written *Whattèrre-ero*, and in two other liſts the laſt word was ſpelt *oora* for *ero*, ſo that I think it is plain from the nature of the language that *Whatàrre-oòra* is the true writing of the name. The name *Waitàhoo* given to the iſle of Chriſtina by the natives themſelves, confirms this ſtill more, for we found that the inhabitants of the Marqueſas never or at leaſt very ſeldom pronounced the *r*; this was evident to me from a vocabulary of about eighty words not containing a ſingle word with an *r*, and from the circumſtance that all the words in the Taheitee language correſponded with the words of the language of *Waitàhoo*, with this difference only that the canine letter was either omitted or ſoftened. In O-Taheitee the phraſe *come hither* is expreſſed by *harre-mài*, in Waitàhoo by *hanna-mài*; the hand is called *reèma*, and in the Marqueſas *heèma*; two is expreſſed *aroòa* at Taheitee, and *bo-hoòa* at Waitàhoo; three is *atòroo*, and *bo-dò-oo* at the latter place; five is called *reèma*, but at Waitàhoo *heèma*; great is *ròa*, and at the Marqueſas *òa*. The iſland of *Dominica* was called *Oheeva-òa* inſtead

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instead of *Obeeva-róa*; and *Waitàhoo* in all probability is used in lieu of *Wattàrre-oòra*; for by dropping the *r's* there remain *Wateae-oòa* or *Wattà-ooà*, in which an *h* has been inserted to compensate the elision of so many *r's*, and pronounced *Wattà-hooa* or *Waità-hoo*. This is certainly the island of *St. Christina*, one of the Marquesas, discovered by Mendaña, 1595. and is high land.

40. TE-MÀNNO.

41. O-ÒTTO.

42. O-HEEVA-RÒA, is high land, called by the natives *O-Heeva-òa*, and is the same which Mendaña called *Dominica*; seems to be populous, fertile, and the largest of the Marquesas.

43. O-HEEVA-POTTO.

44. MOPEEHA or MOTUHEA, is a low island, but large, not inhabited, abounding however with fish, coconuts, turtle and pearls.

45. WHENNUA-OÒRA is a low island, has inhabitants, and has the same productions with the former.

46. O-PAPATEA.

47. WOUREEO is a large island, and inhabited.

48. URURUTÙ, inhabited.

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49. O-ADEEHA is an island to which men resort occasionally for fishing, but do not live continually on it.

50. O-AHOUA-HÒU, large, and peopled.

51. O-WEEHA.

52. O-RIMA-TÀRRA, high land and inhabited.

53. O-RAI-HAVÀI.

54. O-RARO-TÒA has inhabitants.

55. O-AHOURÒU larger than Taheitee.

56. O-TOOMOO-PÀPA.

57. TOUTEÈPA, a low island of no great extent, but is however inhabited.

58. O-REEVA-VÀI; Tupaya added this remark, "fine "hatchets come from thence to *Raiedea*:" whether these are iron or good stone hatchets cannot be determined from this account. If they had iron hatchets, they must have been there ever since the time of Abel Janſen-Taſman, who was in this neighbourhood in 1643, or ſince the times of Schouten and le Maire, 1616. I obtained at *E-Aoowe* a ſmall nail ſticking in a kind of handle, which at leaſt proves, how carefully the ſmalleſt pieces of iron are preſerved by theſe people.

59. TAINÙNA.

60. O-RI-

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60. O-RIMA-TÈMA, from its position it seems to be the low island seen by us in the year 1774, and called *Palmerston's Island*.

61. O-ROTOÙMA is said to be larger than Taheitee.

62. O-POPPÒA.

63. MOË-NO-TÀYO is a low island, and from its situation seems to be that which we called *Hervey's Island* in 1773.

64. TE-TOÒPA-TÙPA-EAHOÙ.

65. O-HITTE-PÒTTO corresponds with the situation of *Savage Island* seen by us in 1774.

66. O-HITTE-TOUTOU-ATÙ.

67. O-HITTE-TOUTOU-NÈE.

68. O-HITTE-TOUTOU-RÈRA.

69. O-HITTE-TAITÈRRE.

70. TE-AMAROO-HÌTTE.

71. TE-ATOU-HÌTTE.

72. OUOWHÈA.

73. O-TOOTOO-ÈRRE.

74. TE-OROOROO-MATIVATÈA.

75. WOUWÒU a small low island, but inhabited.

76. OOPÒRROO, a large island and well peopled.

77. TE-ERREPOO-OPO-MATTE-HÈA.

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78. O-HEAVAI is larger than Taheitee; *Tupaya* added "it is the father of all the islands."

79. TEDHU-ROA, a small island, a few leagues to the North of O-Taheitee, has no other inhabitants than those who occasionally resort to it from Taheitee.

80. O-WANNA, one of the low islands, East of Taheitee.

81. TATA-HAPAI, 82. TAPY-ARY, 83. HAEDEDE, are three other names of islands which I found mentioned in one of the lists, without any thing relative to their situation.

84. PAPPAA is a low island, somewhat to the East of *Toopai* (20), whose inhabitants frequently go to this last mentioned island in order to fish and to catch turtle, but their language is not understood by the people of Borabora, who resort there for the same purpose.

As I have no account of the particular situation of the five last isles, I omitted the names on the chart. However the number of more than eighty isles, is abundantly sufficient to prove that the inhabitants of the Society-isles have a competent and extensive knowledge of the geography of their neighbourhood, considering the small size and slight structure of their embarkations, and the want of a compass; and that they cannot like the antient Phœnicians and the Greeks, follow the shores of an extensive continent,

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in order to make diſcoveries, but are obliged to croſs large tracts of the ocean before they arrive at another iſland; and what is more remarkable, having no other proviſions for theſe long navigations, than their ſour paſte, and ſome fruit, which cannot be kept above a few days in an eatable ſtate; nor have they any veſſels large enough to keep freſh water in for a long time; and yet with all theſe inconveniences, they have diſcovered lands at more than 400 leagues diſtance round their iſlands.

The Friendly-iſles are a group whereof *Tonga-Tabbu*, *E-Aoowe*, and *Namacka* are the largeſt; but we ſaw afterwards many ſmall ones, and heard a ſtill greater number named. The ſmall iſlands off the North Eaſt point of *Tonga-Tabbu*, were called WEWEGHEE. When we were ſailing to *Namocka*, in 1774, we ſaw to the Eaſt of it ſome iſlands, whereof one was called O-MÀNGO-NOÒE and the other O-MÀNGO-EÈTEE, i. e. *great and little Mango*; they lay both to the North of our track; to the South of it we obſerved the iſles of TONOO-MÈA and TEREFETCHÈA. South of *Namocka-nòoe* was NAMÒCKA EÈTEE, which laſt, Taſman called *Namocaki*, on his drawing. To the North Weſt of *Namocka*, are two high iſles, the Weſternmoſt is called TOFOÒA, contains a Volcano, and is deſigned by Taſman, under the name *Amattafoa*, which ſpelling Captain Cook has adopted in his chart; the Eaſternmoſt of theſe iſles is called by the natives OGHÀO, but by Taſman *Kaybay*.

The

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The Weſternmoſt of the cluſter of low iſles, ſituated to the North and North Eaſt of Namocka, is called MOTTO-WÀ. The other little keys of this archipelago, were called O-TOOGHOÒA, O-OÒA, LOOGHELÀ-EI, FONNOO-ÀCKA, LAGHOLLÀ, OOFÀNGA, and WOFOÒGEE: theſe were all ſituated to the North of *Namocka*, but farther to the North Eaſt, the natives told us were the iſlands of OOVÈEA, WO-ALEE-ÀVA, OLEEFÀNGA, KO-FOÒ, KO-E-E-ÒNNA, KO-NAGHOONÀMOO, O-FOOLÀNGO, MOU-E-E-ÒNNE, TOGHOÒROO, KOË-NOÒGOO, KO-ÒGEE, KO-NEÈMOO, and TONOO-NOO-OFOÓA.

Another account of ſome iſlands, lying ſtill further to the Weſt, is given by QUIROS, as it was communicated to him by a native of the iſle of *Chicayana*, * and as deduced from his own obſervation and diſcoveries.

1. TAUMÀCO. Quiros ſaw in 10°. South latitude, 1250 leagues from Mexico, an iſland, eight or nine leagues in circumference, which was high and black, like a volcano, and its name he found to be *Taumàco*.

2. CHICAYÀNA. Four days ſail from thence, is a low iſland, larger than TAUMÀCO, and in the language of the country, dogs are named *Te-cùri*, or *Te-ghoòree*, in the ſame manner

* See Dalrymple's Collection of Voyages, vol. 1. page 151.

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manner as they call them at Tonga-Tabbu, and New-Zeeland, which may be conſtrued into an argument for the identity of the language.

3. GUAYTÒPO, is another iſland larger than the two before-mentioned, at three days ſail from Taumaco and two from Chicayana; the inhabitants of theſe three iſles are friendly people.

4. MECAYRÀYLA is in all probability a low iſland, and inhabited, to which the natives of Guaytopo ſail, in ſearch of tortoiſe-ſhell, of which they make their ear-rings.

5. TUCÒPIA is a high iſland in twelve Degrees South Latitude, five days ſail South Weſt from Taumaco.

6. FONOFÒNO is the name of a cluſter of ſmall flat iſles, three days ſail from Taumaco, though the voyage may be performed in two days with a freſh wind; the inhabitants are ſaid to be very tall. The language differs from that ſpoken at Taumaco.

7. PÌLEN and NÙPAN are iſles near the Fonofono iſles.

9. POURO is a large country very populous; its inhabitants are of a dun colour, at war among themſelves, and have ſilver-headed arrows.

There are accounts in Herrera, Galvano, Argenſola, and De Couto of ſome iſlands diſcovered by ALVARADO and GRIJALVA, which

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which seem to be connected with the new Caroline Islands to the South in about 205 degrees West longitude from Greenwich, near the line: the names of these isles are given in Mr. Dalrymple's Collection of Voyages, vol. i. p. 35, 36, 37, 38, and 39; but as they were not mentioned by the natives, I have forborn to speak of them as proofs of the Geographical knowledge of the natives of these parts.

The foregoing account of the many islands mentioned by Tupaya is sufficient to prove that the inhabitants of the islands in the South Sea have made very considerable navigations in their slight and weak canoes; navigations which many Europeans would think impossible to be performed, upon a careful view of the vessels themselves, their rigging, sails, &c. &c. also the provisions of the climate.

The arts of dancing, music, and poetry, are generally understood by almost every individual from the highest to the lowest rank, but the sciences of physic and its various branches, those of geography, navigation, and astronomy, are known only to few. This ignorance extends so far that the greater part of the nation cannot count beyond ten: but those who have been instructed by their teachers can reckon as far as 200. I could not learn whether they can count beyond that number, but am rather inclined to believe they cannot. Their way of reckoning is by

enumerating

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enumerating firſt the digits, 1 *a-tahài*, 2 *a-roòa*, 3 *a-tòroo*, 4 *a-hèa*, 5 *a-rèema*, 6 *a-hòno*, 7 *a-hìddoo*, 8 *a-wàrroo*, 9 *a-hèeva*, 10 *a-hòoroo*; then they add a ſecond ten as far as twenty, in the following manner; 11 *ma-tahài*, 12 *ma-roòa*, 13 *ma-tòroo*, 14 *ma-hèa*, 15 *ma-reèma*, 16 *ma-hòno*, 17 *ma-hìddoo*, 18 *ma-wàrroo*, 19 *ma-heèva*, 20 *a-tahài-tàoo*. From thence they count by ſcores to 200; viz. they ſay for 21 *a-tahài-tàoo-màra-tahai*, literally one twenty with one; 30 is called *tùhai-tàoo-màra-hoòroo*, 40 *a-roòa-tàoo*, 50 *a-roòa-tàoo-màra-hoòroo*, &c. &c. The teachers are men, who have either from their fathers or other teachers acquired a knowledge, which, they again impart to others. Theſe people are callled *Tàhata-orrèro*, are very much reſpected, and commonly belong to the tribe of chiefs; which circumſtance induces me to believe, that from their eaſy and independent circumſtances, they are not under the neceſſity of communicating their knowledge to their pupils for any retribution; as there is little probability that a chief ſhould accept of a reward, or even honorary compenſation, having himſelf a competency, viz. land, a houſe, fruits, and trees that bear them; hogs, dogs, and fowls, and laſtly toutous to ſerve him.

The bulk of their ſcience is the work of memory only, and by no means the reſult of meditation, reflection, or reaſoning. For I met with ſome of their chiefs who had attempted to learn the

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names of the months and days, but knew them only imperfectly, having taken no pains to preſerve their knowledge; but thoſe profeſſed teachers, *(Tabata-orrero)* were more perfect. However there muſt have been a time when this knowledge was firſt introduced among them, and that man who was its author muſt have had patience to attend with unwearied application to the ſtudy of the heavens, and the motion of the heavenly bodies, and been endued with ſagacity to diſcover the true length of the ſolar or bread-fruit year, and the duration of lunations, together with the beginning of the new moons. The direction in which the remote iſlands are ſituated, which they know is a buſineſs of the greateſt difficulty, and required a remarkable ſkill, reflection, and combination of ſeveral incidental points; which evidently ſhews, that this man had very ſtrong natural parts, and had uſed himſelf to apply them to the various occurrences of his life, and the objects ſurrounding him. It might perhaps be urged, that this knowledge had been moſt probably carried along with them from Aſia and the more civilized nations of that continent. Though this perhaps might be allowed in regard to other ſciences, yet their knowledge of aſtronomy and geography, or their ſkill in determining with nicety the true ſituation of iſles at the diſtance of 400 leagues from their own country, and directing the courſe

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of their boats by the ſun and ſtars,* proves evidently that this ſcience muſt have had its riſe and progreſs among themſelves; as many points could by no means agree, had the Aſiatic aſtronomy diſcovered in the Northern Hemiſphere been carried to Taheitee. The points where the ſun riſes and ſets at different ſeaſons, in countries ſituated in the Southern hemiſphere, differs from thoſe in the Northern, ſo that the Aſiatic knowledge muſt have been in a great meaſure uſeleſs. The farther the Aſiatic country, in which we will ſuppoſe the Taheitean aſtronomy to have originated, is removed from the equinoctial line Northwards, the more ſenſible does this difference become, and renders it more probable that the inhabitants of theſe iſles were the inventors of their own aſtronomy and geography: and if they had ſtrength of

* The Endeavour, in which ſhip Tupaya ſailed to Batavia, ſailed firſt from Taheitee into forty Degrees South Latitude, then ſhe came by a North Weſt courſe into twenty-eight Degrees, after this ſhe came by a South Weſt courſe to about thirty-eight Degrees, and by a Weſtern run to New Zeeland, which iſlands were circumnavigated in runs of various directions to forty-eight Degrees South Latitude, till by another Weſterly courſe the coaſts of New Holland were reached, along which ſhe ſailed North and North Weſt, up to about four Degrees North Latitude, and then Weſt to Savu, and laſtly by the Streights of Sunda to Batavia. However, Tupaya was never at a loſs to point to Taheitee, at whatever place he came, even at Batavia at more than 2000 Leagues diſtance: which evidently proves that he was perfectly well acquainted with aſtronomy and geography, as far as they are neceſſary for theſe purpoſes.

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mind ſufficient to enable them to invent ſciences which require accurate obſervations, and a remarkably ſtrong ſagacity; why may we not think them equally capable of being the inventors of the whole cyclus of their knowledge.

Mactì ingenio eſte cæli interpretes, rerumque naturæ capaces, argumenti repertores, quo deos homineſque viciſtis.

Plin. lib ii. c. 12.

SECT.

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SECTION. IX.

Religion, Mythology, Cosmogony, Worship, Origin of Mankind, Future State, Rites genethliac, Nuptial, Sepulchral.

FRAGILIS & LABORIOSA MORTALITAS IN PARTES ISTA (NUMINA) DIGESSIT, INFIRMITATIS SUÆ IMMEMOR, UT PORTIONIBUS QUISQUE COLERET, QUO MAXIME INDIGERET. ITAQUE NOMINA ALIA ALIIS GENTIBUS, & NUMINA IN IISDEM INNUMERABILIA REPERIMUS.

Plin. Hist. Nat. lib. ii. c. vii.

RELIGION.

THE Contemplation of the infinite power and wisdom of the creator and governor of the world, the fountain of all good, the witness to, and judge of all our actions; and on the other hand the sense of our own weakness and wants, together with the impossibility of obviating or avoiding many great and remarkable incidents of our lives, impress our minds with awe and respect, with a confidence in, and love towards this friendly distributor of mercies. If again we examine our faculties both of body and mind, the enjoyments of which we are capable, especially of a rational sort, and the thirst after everlasting life and happiness

RELIGION. happineſs which every individual feels ſtrongly in his breaſt, notwithſtanding the prejudices of education, and the wiles of vice and predominant luxury; it becomes more and more evident that the Supreme Being deſerves our humble adoration, our warmeſt attachment, and our unfeigned love: that we ought to exert our faculties in examining and ſtudying the immenſe and infinite powers and perfections of this being; that it ſhould be our chief thought and earneſt endeavour to imitate, and to approximate the bright virtues of this great prototype of perfection and goodneſs; to behave in a manner becoming the many ties and relations by which the creator has been pleaſed to connect us with him and other ſubordinate beings. The above ideas or others to the ſame purpoſe, form the ground work of true religion, of all natural obligations, moral virtues and religious worſhip. The ideas of the inhabitants of the South Sea iſlands on this head, are we may ſuppoſe, leſs clear, perfect and refined: however they acknowledge an almighty inviſible lord and creator of the univerſe, who executed the various parts of his creation by various ſubordinate powerful beings. They are of opinion that he is good and omniſcient; that he ſees and hears all human actions, and is the giver of all good gifts. They feel their own wants, and therefore apply for redreſs to the Supreme Being, and offer to him, with a grateful heart, the beſt gifts of their lands. They acknowledge to have a being within

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their bodies, which ſees, hears, ſmells, taſtes, and feels, which they call *E-teèbee*; and they believe, that after the diſſolution of the body, it hovers about the corpſe; and laſtly, retires into the wooden repreſentations of human bodies, erected near their burying places. They are convinced of the certainty of a happy life in the ſun, where they ſhall feaſt on breadfruit, and meat which requires no dreſſing; and they think it their duty to direct their prayers to this Supreme Divinity, or *Eatoòa-rahài*. Thoſe who have more leiſure among theſe people, are very deſirous of learning what is known relative to this and all other inferior divinities, and to practiſe ſuch virtues, as by the general conſent of mankind conſtitute good actions; theſe are briefly the general outlines of their religion and worſhip. RELIGION.

Though theſe principles are generally adopted among the greater part of mankind, provided they are not ſo much degraded and debaſed as to have loſt even theſe univerſally acknowledged notions of the Deity, and of the duties we owe him; there is, however, no impropriety in believing that theſe very notions are the venerable remains of a tradition, which may have been brought over from the Aſiatic continent. We do not, however, mean to inſinuate, as if their notions of the Deity and his worſhip were of ſuch a complexion that they could not have been learnt but by tradition; there are, however, many reaſons which confirm me in this opinion; firſt,

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RELIGION.

firſt, as their language, their manners, cuſtoms, and many other circumſtances, prove the Aſiatic origin of the nation, why ſhould we not alſo ſuſpect their religious principles to have been derived from the ſame ſource: *ſecondly*, the indolence and ſupineneſs of mankind is ſo great in moſt matters, which require reaſoning, attention, and judgment, or which, ſuppoſe a great many abſtract ideas, that we rather chooſe to follow a beaten track, than to ſtrike out a new one, by dint of argumentation, and by a conſtant exertion of attention and judgment. It ſeems therefore more natural, that theſe nations ſhould have adopted the notions of their anceſtors or forefathers, than to imagine that they formed the whole ſyſtem of their religion, by the mere ſtrength of their underſtandings. *Laſtly*, there is, beyond all doubt, ſo great an agreement between the religious principles of Taheitee, and its neighbourhood, and thoſe of the reſt of the Eaſt, that we cannot heſitate a moment in pronouncing them to have been imported from Aſia; nay, if we go one ſtep further in our enquiry, we muſt ſoon find, that there is not a country, nor a nation exiſting, which has not preſerved ſome ideas in their religion, which, when attended to, prove that they were handed down to them by tradition: now, by going backward into remote ages, there muſt be at laſt a place where we muſt ſtop; and this, though ever ſo remote in antiquity, ſeems to have obtained theſe notions from the very ſource. Mankind, collectively in its

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infant ſtate, is exactly as the individual in the firſt years of his exiſtence: the ideas of a Supreme Being, and the obligation of worſhipping him, are by no means of ſuch a clearneſs and evidence, that they ſhould be eaſily diſcovered by a child; thoſe who have the care of his education are therefore ſolicitous, at this early period, when the faculties of apprehending, judging, and reaſoning, are not yet developed or ſtrong enough in the child, to treat the great truth of the exiſtence of God, and the obligation of worſhipping him as a precept, or as an univerſally acknowledged, indiſputable axiom; and inculcate it as ſuch into the minds of their children. Afterwards, when they find the faculties, by exerciſe and education, to be more enlarged, and to have acquired more ſtrength, they lead their pupils back, and teach them to inveſtigate the exiſtence of God and his attributes, together with the nature and obligation of worſhipping him, by arguments and by the force of reaſoning. Divine Providence ſeems then in this reſpect, to have treated mankind like children; and to have given the firſt notions of himſelf and his exiſtence, as an axiom, and inforced its worſhip by precept, conforming theſe great and ſalutary truths to the infant ſtate of mankind; as long therefore as the uſe of reaſon and of the intellectual faculties is not yet practiſed in a nation, theſe religious notions muſt be communicated by precept and tradition: but as ſoon as men feel themſelves ſtrong enough, they will no RELIGION.

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RELIGION. longer truſt to tradition, the inſtructor of their childhood, in this great and intereſting truth, and ſoon find that it is impoſſible to be miſtaken in this important argument, as the exiſtence of this Infinite Being is written with ſo legible characters in every object ſurrounding them: they ſoon go back to themſelves, and inveſtigate their own mental and ſenſual faculties, and from thence are gradually led to acknowledge the duties they owe to God, themſelves, and all the rational, animated, organic, and inanimated creation, which they either find co-operating with, or ſubordinate to themſelves. The people at Taheitee preſerve their notions relative to the Deity and his worſhip by tradition, and are as yet unable to inveſtigate the neceſſity of the exiſtence of God, the nature of his attributes, and the duties they owe him by reaſon; they are therefore ſtill in the infant ſtate of humanity, not yet ripened to the uſe of argument and reaſon in religious matters: and, according to the preſent ſituation of affairs, a long time muſt paſs, before they will be able to bear the evidence of theſe doctrines, and the radiancy of this truth; we have only therefore to wiſh that we may be permitted to ſee the minds of theſe excellent people irradiated by the bright religion taught by nature and reaſon; which may prepare them for a due reception of the doctrines of the Chriſtian diſpenſation.

Their

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Their preſent ſyſtem of religion is a polytheiſm, which may be called one of the beſt and leaſt exceptionable as yet known. The name EATOÒA, admits a very great latitude in its interpretation; for though it properly ſignifies a *Divinity*, it may likewiſe be interpreted a *Genius*. However they admit a Being whom they call *Eatoòa-rahài*, which is the ſupreme *Deity* above all. Each of the iſles ſurrounding Taheitee, has its peculiar god, or as we may juſtly call it, its *tutelar Divinity*. Taheitee is under the peculiar guidance and government of ORÙA-HÀTTOO; over Huaheine preſides TÀNE; over O-Raiedea ORÒO: over O-Tahà ORRA; Borabora has its TAÒOTOO; Maurooa its OTÒO; and in Tabuamànoo TARÒA is the chief god. This is always the Divinity whom the high prieſt of each iſle addreſſes in his prayers at the grand Maràì of the prince of that iſland. The great Deity they think to be the prime cauſe of all divine and human beings and as this nation has introduced every where the idea of generation, it has applied the ſyſtem of generation to the origin of their inferior Divinities, and for that purpoſe the natives thought it likewiſe neceſſary to attribute to the EATOOA-RAHAI, a being of the female ſex, from whoſe conjunction all the inferior Eatoòas, and even mankind are deſcended; and in this reſpect they call the great Deity TA-ROA-T'EAY-ETOÒMOO the great procreating ſtem: but his wife is not of the ſame nature with him; their groſs ideas RELIGION.

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RELIGION. imagined a coexiſting material hard ſubſtance neceſſary, which they call O-TE-PÀPA a rock. Theſe procreated O-HEÈNA the goddeſs who created the moon, and preſides in the black cloud which appears in this luminary; TE-WHETTOO-MA-TARÀI the creator of the ſtars; OOMARRÈEO the God and creator of the Seas; and ORRE-ÒRRE * who is the God of the Winds. But the ſea is under the direction of 13 Divinities, who all have ſome peculiar employment, as their name often ſeems to imply: their names are the following; 1. OOROO-HÀDDOO, 2. TAMAOÒEE, 3. TA-ÀPEE, 4. ATOO-AREEÒNO, 5. TANÈEA, 6. TAHOU-MEÒNNA, 7. OTA-MA-ÒU-WE, † 8. OWHÀI, ‡ 9. O-WHÀTTA, 10. TA-HOÓA, 11. TEOO-T-EÌYA, § 12. OMA-HÒOROO, 13. O-WHÀDDOO. The great God TAROA-T'EAI-ETOÒMOO lives in the ſun, and is repreſented as a man, who has fine hair, reaching down to the very ground; he is thought to be the cauſe of the earthquakes, in which caſe the natives call him O-MAOÙWE, and he is likewiſe the creator of the ſun; a rude repreſentation of this deity, under the attribute of *O-Maoùwe*, was obſerved by Captain Cook, in 1769, when he made the tour of Taheitee in a boat: it was

* *Orree* ſignifies wind.

† *Ma-ôu* ſignifies a ſhark.

‡ *Owhài* is called a ſtone or pebble.

§ *T'eiya* is a fiſh or a ſail of a canoe.

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was formed of basket-work, and covered with black and white feathers. This is the only instance of a figure or representation of their divinities which I ever heard of; and Capt. Cook does not mention that any respect or reverence was paid to this rude figure of *Maoùwe*. The natives have a tradition that the great Deity procreated the inferior divinities, each of whom created the part of the world allotted to his peculiar care: one the seas, another the moon, the stars, the birds, fishes, &c. &c. *O-Maoùwe* created the sun, and then took the immense rock *O-Te-pàpa*, his wife, and dragged her from West to East through the seas: when the isles, which the natives now inhabit, were broken off; after which he left this great land to the East, where it still exists. The care and government of each island was committed to the inferior divinities, enumerated before. The god *Tàne*, is not more particularly addressed than the rest of his brother divinities, nor is he supposed to take a greater part in the affairs of mankind, * except at Huaheine, which place is under his peculiar inspection, and where he is worshipped as the tutelar divinity of that country. Besides these divinities of the second class, there are others of a still inferior rank, and though called *Eatooas*, are no more than what the Greek or Roman Mythologists would have called *Genii*, or *Dii Minorum Gentium*.

RELIGION.

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* Hawkesworth, vol ii. p. 239.

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RELIGION. *Gentium*: one of them, called OROMETOÒA, is of a malignant diſpoſition, reſides chiefly near the *Marais* and *Toopapous* (places of burial) and in or near the boxes, or little cheſts, including the heads of their deceaſed friends, each of which, on that account, is called *Te-whbarre no te Orometoòa*, the houſe of the evil genius *Orometoòa*. The people at Taheitee are of opinion, that if their prieſts invoke this evil genius, he will kill, by a ſudden death, the perſon on whom they intend to bring down the vengeance of this divinity. Their prieſts are, I ſuppoſe, not the moſt conſcientious perſons, and, if bribed, will not ſcruple to poiſon the man who is devoted to deſtruction, and afterwards aſcribe the ſudden death of ſuch a perſon to the malignity of *Orometoòa*; and this ſeems to be the more probable, as I was told with the ſtrongeſt aſſeveration, that it was not uncommon to ſee the prayers of the prieſts to their *Orometoòa* fulfilled. I heard likewiſe of another genius, or inferior divinity, called OROMEHOUHOÙWE, who had the ſame power of killing men, with this difference only, that he was not addreſſed by prayer, but is only worſhipped by hiſſing.* The laſt kind of genius

* It is remarkable that this mode of worſhipping the deity or a genius by hiſſing was likewiſe adopted by the Egyptian Prieſts according to the teſtimony of NICOMACHUS GERASENUS HARMON. MANUAL. l. ii. (*in Meibomii auctoribus Antiquæ Muſicæ. vol.* i. *p.* 37.) Αρμονια αποτελει δραστικας δυναμεις και τελεστικας των θειων. διο οτ'αν μαλιστα οι θειστοι (lege θειοτιμοι) το τοιουτον (lege το θειον) σιζαζονται συγμοις τι και εναρθροις και ασυμφωνοις ηχοις συμβολικως επικαλουνται

nius is called TEEHEE; the natives told us, that was the thing which sees, hears, smells, tastes, and feels within us, which forms the thoughts, * and, after death, exists separately from the body, but lives near the burying places, and hovers about the corpse or bones, deposited there, is likewise an object of their reverence, though addressed only by hissing: they informed us farther, that these *Teehees* inhabit chiefly the wooden figures, which are erected near the marais; and are, according to the sex of the person deceased, either males or females: they are likewise dreaded; for according to their belief, they creep, during night, into the houses, and eat the heart and entrails of the people sleeping therein, and thus cause their death. RELIGION.

The inhabitants of Taheitee shew their reverence to their divinities in various manners, *first* by the appropriation of certain places for religious worship, which they call MARAI. These places are commonly on points projecting into the sea, or near it, and consist of a very large pile of stones, generally in the shape of an.

κελάδεται. *Harmonia perficit potestates operatrices & divinorum effectivas. Quare Theurgici, cum sanctissime colunt numen aliquod, invocant illud sibilis & poppysmis, sonisque qui articulationes & consonas non habent.*

* The Taheiteans have no expressions for abstract ideas. *Thoughts* certainly do not convey a corporeal idea, and required therefore a peculiar turn in order to be expressed by words: the Taheiteans have called them *pareu no te ihoo* words of the belly.

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RELIGION. an Egyptian pyramid, with large ſteps; ſometimes this pyramid makes one of the ſides of an area, walled in with ſquare ſtones and paved with flat ſtones: the pyramid is not ſolid, but the inſide is filled with ſmaller fragments of coral ſtones. Sometimes there are one or more ſheds ſtanding at a little diſtance from the marai, for the reception of ſuch people as attend the marai on account of praying or performing the funeral rites of their relations. Sometimes there are ſpars fixed in the ground and joined by croſs beams in a firm frame at a ſmall diſtance from the marai, and likewiſe ſmall ſtages raiſed on pillars of various heights and dimenſions. The ſtages are called *Whattas*, and are intended for the reception of the hogs, dogs, fowls and fruits, which the natives offer to their gods. The large frame is ſometimes thirty feet high, and about twenty or more wide, and often entirely covered with bananas hung up for the gods with many garlands of flowers, and ornamented with green branches.* Laſtly, near the marais are twenty or thirty ſingle pieces of wood fixed into the ground, carved all over on one ſide with figures about eighteen inches long, rudely repreſenting a man and a woman alternately, ſo that often more than fifteen or twenty figures may be counted on one piece of wood, called

* The plants employed for that purpoſe are chiefly the *Peordoo* or *Epdoa-tardoroo* or Cratæva, the *E-mótoo* Melaſtoma malabathrica, and the *Awa-waidai* or Piper latifolium.

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called by them *Tèhee*. To ornament the marais and to honour by it the gods and the decayed buried there, the inhabitants plant several sorts of trees, near them; above all the *Casuarina equisetifolia* or *Toa-tree* is the most common, not only in Taheitee and its neighbourhood, but even in the Friendly islands; where exceeding large trees were observed by us, near their *Assayetoŏcas* or places of burial and worship. The *Tamànoo* or Calophyllum inophyllum, is likewise planted near the *Marais*, as is the *E-meero* or Hibiscus populneus; with the *Ewharra* or Athrodactylis; and lastly the *Etèe* or Dracæna terminalis, of which there is one variety with red flowers, and red veins in the leaves, with many others. RELIGION.

The second mark of reverence paid to their divinities, consists in the appointment of certain days appropriated for their worship. Though I cannot with any precision point out any day which they peculiarly celebrated as an anniversary feast or holiday; it is nevertheless certain from the accounts I repeatedly heard, that they did observe some days as feasts.

Another way of declaring their respect for their divinities is the appointment of certain persons for the peculiar performance of prayers, rites, and ceremonies. Each great chief or king of an island chooses from among the inferior chiefs an intelligent person, who is to be his *Tahòuwa* or priest; whose business it is to pray

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RELIGION. and offer up ſacrifices, and to perform the rites which are deemed requiſite on each occaſion. This dignity is hereditary and deſcends to the ſon. Each chief of a province has likewiſe a prieſt, and the inferior ranks of people have in the ſame manner peculiar prieſts, who cannot perform rites and offer up prayers for men of a higher claſs: it is obſerved by Hawkeſworth, vol. ii. p. 239. that even the prieſts for the males cannot perform the ſame office for the females; and that each ſex has marais, to which the other ſex is never admitted, though they have marais common to both. Theſe circumſtances indeed we never heard, but it is not improbable that they have theſe ſingularities in their mode of worſhipping.

The acts of devotion, which theſe nations pay to their divinities are likewiſe of various kinds: the firſt is the invocation or prayer addreſſed to one of their deities. The prayers themſelves are either ſpoken loud or offered tacitly by the prieſt: for each peculiar ceremony they have ſhort ſentences, which they deliver on that occaſion; the language ſeems to be more formal, ſententious, and almoſt totally different from that uſed in common life: for none of us were able to underſtand the leaſt ſentence of their prayers, though we were poſſeſſed of large vocabularies, and had acquired a tolerable ſhare of knowledge of their language. Beſides the prayers which the prieſts of each claſs deliver upon certain occaſions, the laymen themſelves are not excluded from ſaying their

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RELIGION.

their own prayers, and performing many ceremonies of their worſhip: for when a young man at Taheitee, in 1773, choſe to ſail with us to Huaheine, before he eat his ſupper, he repeated a kind of prayer, and took a very ſmall piece of the fiſh, which was intended for his ſupper, and laid it near him on the table, as an offering for the Eatoòa. The natives told me when I enquired about their mode of worſhip, that the prieſt ſometimes delivered his prayer ſo low that nobody could hear any thing, yet he was heard by the Eatoòa, who is then near the marai, and ſpeaks to the prieſt again, and though there were ever ſo many people preſent they could not hear a ſingle word ſpoken by the Eatooas, whereas the prieſt *(Tabouwa)* underſtood it all. The inferior divinities according to our former obſervation are revered only by a hiſſing ſound.

A native of the Society-iſles no ſooner comes within ſight of a marai, than he ſtrips his garment from his ſhoulders, and pays it the ſame reſpect which he ſhews his prince, by uncovering his ſhoulders: which moſt undoubtedly proves that a very peculiar reverence is ſhewn to the place, and which they would not do, unleſs they were perſuaded, that a being of a ſuperior rank lived there, and well deſerved ſuch a mark of reverence.

Not contented with prayers and mere profeſſions, delivered by words, the natives of theſe iſlands endeavour likewiſe to add to

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RELIGION. them ſome ſacrifices of the animals and fruit of their country. I have frequently ſeen hogs, dogs, or fowls roaſted, covered with a fine piece of cloth, and expoſed on a kind of altar, built near the marai for that purpoſe: I likewiſe ſaw great ſcaffoldings in the neighbourhood of the marai, wholly covered with bananas, and plantanes, as ſacrifices or offerings to their gods; but I never ſaw any thing elſe offered to their divinities, nor did I ever hear that they ſacrifice men. However, as Captain Cook ſeems to have inveſtigated the ſubject very carefully, * it is not improbable † that they think it expedient to puniſh their criminals in this manner, by devoting them as ſacrifices to their God: nay, as we have already mentioned, ‡ that in more remote times canibaliſm was introduced among the Taheiteans, and the inhabitants of the Society Iſles, it is highly probable that theſe human ſacrifices, are the remains of the canibaliſm of theſe iſlanders; with this difference, that they now

* See Cook's Voyage, vol. 1. p. 185.

† Almoſt all the antient nations ſacrificed men; the Egyptians excepted; who never were addicted to this cruel and barbarous cuſtom; and wherever it is mentioned in old writers that the Egyptians practiſed this method in order to appeaſe the anger of their gods, it is to be underſtood of the Arabian ſhepherds, who undoubtedly were uſed to reconcile their divinities by human ſacrifices, and who once had over-run and conquered all Egypt. On the ſubject of averting the anger of the gods, by the effuſion of human blood, among all nations, none has written with greater learning, than the ingenious Mr. BRYANT, in his *Obſervations and Inquiries relating to various Parts of ancient Hiſtory*, p. 267—285.

‡ See Cook's Voyage, p. 327, and likewiſe p. 358, 359, and 360.

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now slay and offer the criminals to the Gods, without eating them; RELIGION.
whereas they formerly added that inhumanity and barbarism. Though the restriction of killing only *bad men*, for the reconciliation of the favour of their Gods, seems very much to mitigate this cruel custom, and by all appearance sanctifies the impious rite into a legal necessary action; it is, however, again debased in the most detestable manner, by leaving the choice of the person, who is to be devoted to the gods to the caprice of the High Priest; who, on this occasion, has an opportunity, not only of indulging his private revenge against any man, by whom he may think himself injured, but also of practising at the same time one of the most abominable scenes of priest-craft that ever took place; for it is said, that on certain occasions, when the nation is solemnly assembled, the High Priest alone enters the house of God, or the marai, and after staying there for some time, he returns and informs the congregation, that having conversed with their great God, he was ordered to ask for a human sacrifice, and then mentions the person whom the deity desired to have offered; this man is immediately seized and killed, being beaten till he be dead. The circumstance, that such criminals only as had nothing wherewithal to redeem themselves, are devoted to death, proves besides, that the priest has an opportunity of satisfying his avarice. What has been hitherto said on this peculiar part of the religious worship practised

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RELIGION. in the Society iſles, confirms us more and more in that general truth, that the greater part of mankind, when left to themſelves, in their religious principles, and modes of worſhip, have always more or leſs deviated from that noble ſimplicity, which the true adoration in the ſpirit and truth requires, and which is ſo fully held forth in the Chriſtian diſpenſation; wherein the ideas of the Deity are pure, and capable of filling the mind with humility, confidence, and adoration, and prompting every profeſſor of that religion, to the practice of all moral and ſocial virtues, and laſtly, excluding all prieſt-craft from its true and genuine votaries.

The human ſacrifices being left to the choice of the prieſt, who pretends to converſe with the Deity, intimate, that theſe nations have ſome idea of a communication of the will and pleaſure of the Deity, by means of their prieſts. I was told, that in dubious caſes of great conſequence, the prieſt did actually conſult the divinity, and pretended to bring back the anſwer to the people; which ſeems to imply that their marais are looked upon as ORACLES, where the Deity may be conſulted, and his anſwer is plainly heard by the prieſt, and communicated to thoſe who deſire to be inſtructed, and guided by it. This idea has likewiſe pervaded all mankind, for there is hardly a nation to be found, either antient or modern, which had it not inſerted amongſt its religious tenets, that the Deity had reſerved to himſelf the prerogative of inſtructing man-

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kind on the moſt important occaſions, eſpecially ſuch as greatly in- RELIGION.
fluence their happineſs.

The Taheiteans relate, that the great god TARÒA-T'EAY-E-TOÒMOO, having by his wife O-TE-PÀPA, begotten many divinities of both ſexes, who created the various parts of this world, and who now preſide over them; having likewiſe produced the various iſles, by dragging *O-Te-pàpa* through the ſeas, he at laſt begot by her a ſon called O-TÈA, who was the firſt man: and according to their tradition, his limbs were all rolled up in a figure like a ball, but his mother carefully expanded them to the ſhape in which men now appear. A daughter was likewiſe begotten by the ſame parents, whoſe name is O-TE-TÒRRO, who became the wife of O-TÈA, and from this couple they believe all mankind to have been deſcended. This traditional hiſtory of the origin of mankind, accounts at once for many points of their religion and philoſophy: *firſt*, as they think man to have been born of their great gods it is plain that they muſt think their deities ſimilar to mankind, in their external appearance, and this is confirmed by the figure of *Maouwe*, which Capt. Cook met with in his firſt voyage. *Secondly*, though they always proteſted that God could not be ſeen, they had, however, made a human figure to repreſent *Maouwe*, which ſeems to intimate that this repreſentation of a god, was rather reckoned to be a ſymbolical figure, than a real repreſentation:

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RELIGION. representation. *Thirdly*, since they believe that the being which is possessed of sensation and of thinking, or as they call it, of forming the speech in the belly *(paroù-no-te-òboo)* exists after death in a separate state, and is then even unseen capable of actions similar to those it performed when combined with the body, viz. of seeing, hearing, receiving pleasure from the actions of their friends, and of shewing its displeasure by killing people; it is evident that they think of an invisible being, very distinct from the body, and endowed with a free agency. This they call TE'EHEE and represent it frequently under the rude figure of a man or woman, seldom exceeding eighteen inches in heighth; which again seems to indicate that this figure is not intended to be the real figure of the invisible soul, but only its emblem. *Fourthly*, as they think man to have descended from their supreme deity, it is evident they must likewise imagine man to be in some inferior degree homogeneous to their divinities, or *vice versa* their divinities are according to their opinion analogous to man, and as they often told me the great *Eatoòa* could not be seen, or in other words was invisible, this analogy cannot lie in the body the only visible part of man, and must therefore consist in the part capable of thinking and reasoning, which in some measure is analogous to the scriptural phrase of the *image of God*, after which man was first made. *Lastly*, as they attribute to O-TEA the first man but one wife, this circumstance seems to imply that they think monogamy

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my to be the lawful or moſt reaſonable method for propagating mankind. RELIGION.

The inhabitants of the South Sea have certainly ſome notions of a future ſtate; but I muſt confeſs, I am at a loſs how to conciliate their ideas on that head. They told us that the being, which had ſenſations and thoughts, did not decay with the body but was well *(woùra)* and exiſting near its old habitation the body and the remains expoſed on an elevated ſtage, or even near the bones when buried, or the head preſerved in a little cheſt: it is for this being that they expoſe various fruits and meat near the burying place; and the little wooden images or *Teèbees* are, as we were told, the receptacles of the inviſible *Teèbees*, or what we would call ſouls, according to our way of thinking. And notwithſtanding this moſt poſitive aſſertion, they told us almoſt in the ſame breath, that after their death the departed met in the ſun, and attended *Maòuwe*, and feaſted there with this deity upon bread-fruit, and the meat of hogs or dogs, which needs no dreſſing; and ſome even ventured to ſay that they were to have a conſtant ſucceſſion of liquor prepared from *àwa (Piper methyſticum)*. This ſtate they call the meeting or aſſembly of the heavens or ſky *(Touroòa-t'erài)*. * However the people of rank only, have hopes of being

 received

* The word *Touroa* ſignifies the meeting or aſſembly of the ſtates in Taheitee, wherein the king, the chiefs of provinces, prieſts, inferior chiefs, and manahounes have a right to ſit, but the *hoas*, or king's attendants, though preſent, muſt ſtand.

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RELIGION. received in this assembly of the heavens after their demise; and perhaps this idea is formed from the *Touroda* or meeting of the states of the nation, where only the higher ranks of the nation have a right to sit. The *toutous* or lower sort of people meet after death at the *taya-hòboo*, which I am unable to explain. We never heard that any of these places was to be considered as a state of punishment. The *Touroda-t'erài* seems to be a place of enjoyment and happiness, in some measure similar to the *Valhalla* of the Northern nations, where the heroes killed in battle met at ODIN's palace, feasted upon the meat of the boar *Serimner*, * and drank ale or mead out of the skulls of their enemies. The actions of men do not seem to influence in the least their future state according to their doctrine: but I am fully persuaded, that the people of these islands were frequently awed from committing bad immoral actions by the fear of meriting the displeasure and the anger of the Gods; for when I discoursed with them upon various subjects, and in order to try their way of thinking and principles, asked them why they did not kill their children or any other persons, they always replied the Gods would be angry: when I continued to ask whether this anger or displeasure would cause

* See the EDDA, in various places, and likewise *Jo. George Keysler's Antiquitates Selectas Septentrionales*, p. 149. seq.

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cauſe puniſhments to be inflicted, they conſtantly anſwered in the affirmative; when I aſked whether this anger would take place after death, they ſtill affirmed it; but I never could obtain any information concerning the method, place and duration of the anger of their Gods for ſuch crimes. Nay, having one day attempted to diſſuade TEINAMAI from killing the child that ſhe was ſhortly to bring forth, and ſeeing her obſtinate in her deſign, I repreſented upon this very ground to her, that the *Eatoòa* would be angry *(wòriddee)* on that account againſt her; but ſhe very coolly replied, that this might perhaps be the caſe of the *Eatoòa no Pretànee* i. e. the Britiſh God, but the *Eatoòa* of *O-Raiedèa* knew her to be with child by an *Arreeoy*, whoſe children muſt not live, and would therefore not be angry. From the above account however I think we have reaſon to conclude that they are not quite without ſome notions of a future ſtate attended with rewards and puniſhments. Their religion therefore is not altogether diſintereſted, but greatly influences their morals; and in my opinion ſeems well adapted to the weak and infant ſtate of their reaſon; and though they go through all the acts of reverence and adoration both by words and actions, they certainly perform them with a childiſh ſimplicity and humility, from the little knowledge they have early imbibed of the greatneſs, goodneſs, and excellence of the Supreme Being, and likewiſe becauſe they have been taught RELIGION.

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RELIGION. to dread the anger and diſpleaſure of a being whoſe power is infinitely ſuperior to that of any other they have an idea of.

After the *birth of a child*, they do not obſerve any ceremonies whatever, excepting that of depreſſing in ſome degree its noſe, and giving it a name from ſome object or other which is neareſt at hand, or which from ſome circumſtance becomes remarkable. The king of Taheitee was called *O-Too*, which is the name of a grey heron: the chief of the iſle of St. Chriſtina, one of the Marqueſa-iſlands, was called *Ahònoo*, which ſignifies a turtle; one of the chiefs at Taheitee related to *O-Too* was called *Teèbee* the ſoul or a carved figure, which is the ſymbol or emblem of the ſoul. The chief of the province of Tittahàw had the name of *Toumàta-ròa* a great hat, and many more of that nature, much too tedious to mention. However in this early period of life, the male children undergo a ceremony or operation on their genitals, for a piece of bamboo reed is thruſt into the prepuce, and the membrane ſlit by means of another bamboo-reed, (to which a very ſharp edge is given by tearing it) in order to prevent its contracting over and covering the glans. This operation is performed merely from principles of cleanlineſs, by the prieſt, though there is not any religion or religious ceremony mixed with the cuſtom; for which reaſon it is not perfomed on a certain day after the birth of the child, nor at any certain age; but when the child is capable of attending to it, that the prepuce

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may not again join over the glans, then the operation is made, which, from its nature cannot properly be called a circumciſion. Both ſexes have many marks on their ſkin, made by puncturing the part with a toothed inſtrument of bone, dipt into lamp black and water, and by this method they imprint marks which are indelible for life. The men have ſometimes not only a black part on their buttocks, but ſometimes on the arms and even their ſides, and various other parts of the body marked in this manner. The toothed inſtrument is called *Eoòwee-tatattaòu*, a ſpatula of wood, with which they conſtantly ſtir the black colour, and on one end of which they have contrived a kind of ſmall club of the thickneſs of a finger, is the ſecond inſtrument employed on this occaſion; with the ſmall club they give repeated gentle ſtrokes on the toothed inſtrument, in order to make it pierce the ſkin. This ſpatula is called *Tataë*, and the black colour *arahoà-tdttaòu*. The arches which they deſign on the buttocks obtain the name of *avàree*; the parts which are one maſs of black on the buttocks are named *toumàrro*, and the arches which are thus deſigned on the buttocks of their females, and are honourable marks of their puberty, are called *toto-hoòwa*: the prieſts are the only perſons entitled to perform theſe operations, and are paid for their trouble in cloth, fowls, fiſh, and after the natives had obtained European commodities, in nails and beads. [RELIGION.

In

RELIGION. In their *marriages* ſome ceremonies are obſerved, but the authorities we have for talking of them are of no great weight, becauſe the only people who were preſent, did not underſtand enough of the language, to obtain information relative to the ſignification of ſeveral tranſactions and ceremonies they ſaw performed in their preſence. The young Borabora man *Maheine* was married to the daughter of *Topèrre* chief of the diſtrict of *Matavai*, during our ſecond ſtay at Taheitee. We were told that he had been ſitting on the ground by the ſide of his bride, holding her hand in his, being ſurrounded by ten or twelve perſons, chiefly women, who repeated ſome words in a recitative or ſinging tone, to which Maheine and his bride gave ſome ſhort reſponſes: ſome food was preſented to them, and Maheine gave a part of it to his bride and ſhe to him, which action was likewiſe accompanied by certain words, and laſtly they bathed in the river. This is the whole account of the ceremony, which has been obſerved and recounted. Perſons of little curioſity with a very ſlender knowledge of the language, were certainly not the beſt qualified for enquiring into the reaſon and ſignification of any tranſaction or ceremony, and we did not hear of theſe circumſtances till we had quitted the iſle, otherwiſe we ſhould have endeavoured to obtain ſome information on that head.

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The ceremonies usually performed on the demise of persons of rank in Taheitee are more curious than any other seen or described, and contain briefly the following circumstances. As soon as the person is known to be dead, the relations and friends resort to the house he occupied when alive, and there join in lamentations and other signs of grief over the loss of their friend, which continues all that day and night, till the next morning; when the body is wrapped in some of their white cloth, and carried to the neighbourhood of the marai, where the remains of the deceased in future are to be deposited; if that place be distant, the corpse is carried in a boat and conveyed thither on a bier covered by a little thatch in the form of a small house. The corpse is then carried near the shore, attended during the whole time by the priest, who repeats some prayers before the corpse is taken, and continues to repeat them till he reaches the marai. He then renews his prayers and sentences, and sprinkles sea-water towards the body, but not upon it; which is repeated several times, the body having been taken away and carried back each time; till at last a small inclosure being made near the marai, and a kind of open shed called TUPAPÒU,* raised on posts six or seven feet from the ground, being finished, the

RELIGION.

* One of the *Tupapous* is represented in Cook's Voyage, vol. i. p. 185. pl. xliv. and another in Hawkesworth, vol. ii. p. 234, pl. N°. v.

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RELIGION. the corpſe or bier is depoſited under the ſhed either on poſts or on a ſtage made on purpoſe, and left there till the fleſh putrifies and ſeparates from the bones. Meat, fruit, and water are often brought to the *Tupapòu* and left at a ſmall diſtance from it; nor do the relations forget to ornament the *Tupapòu* with cloth and garlands of the ewharra-fruit *(Athrodactylis)* and coconut-leaves. And near it are generally to be ſeen one or more trees of the kind called *Caſuarina equiſetifolia*. The female relations teſtify their grief by tears and by cutting the crown of the head with a ſhark's tooth: the blood flowing from the wound as well as the tears ſhed on this ſolemn occaſion are received on pieces of their cloth and then thrown under the bier, as well as the hair cut off by ſome young people on this occaſion. Some days after theſe ceremonies have been performed, one of the neareſt relations takes up the *bèva*-dreſs deſcribed before p. 450, 453. and holding in one hand a clapper made of two large mother of pearl ſhells; and in the other a flat cudgel ſet with ſhark's teeth along its edge, he begins a ſolemn proceſſion from the houſe of the deceaſed by a long circuit to the *Tupapòu*, preceded by two or more people almoſt naked and blackened by a mixture of charcoal and water, who are called NINÈVA i. e. *inſane* or *mad*, ſuppoſing them to be tranſported by the phrenzy of grief, for if the chief mourner performing the *bèva*, ſhould happen to meet any perſon during his circuit

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circuit, he would run at them and ſtrike them with the ſhark's teeth fixed on his ſtick. For which reaſon, no ſooner is the noiſe of the two ſhells heard, than every one leaves his habitation and endeavours to obtain ſhelter at a diſtance, and out of the reach of the ſhark's teeth: near the corpſe, and the places where men live, a kind of ſentence or prayer is pronounced. This proceſſion is performed for about five moons at certain intervals; which become leſs frequent at the end of the interval than at the beginning; each relation takes this proceſſion in his turn, and now and then the prieſts in company, and at the deſire of the relations repeat their prayers near the corpſe and offer to their deities ſome offerings of fruit or meat. After the fleſh is decayed, the bones are ſcraped, waſhed, and buried in the marai, if the perſon deceaſed was a chief, but without if he belonged not to that claſs. The ſkull of a chief is not buried with the bones, but wrapped in cloth and put in a long box * which the natives call *Te-whàrre-no te-*

RELIGION.

orometùa

* The method of diſpoſing of the corpſe of the dead at Taheitee, ſeems to be at firſt ſight very ſtrange, but upon more mature examination, the ſame practice is found to obtain among many other nations, both antient and modern. When I was in Ruſſia in the ſummer of the year 1765. I obſerved in the great deſart to the Eaſt of the Volga, ſeveral Khalmyks expoſed in the ſame manner for putrefaction. I ſaw one lying dead in a hut in his cloth; I found round the hut ſeveral callico and ſilk vanes on long ſticks fixed in the ground, on which ſeveral lines in Tibetan characters were printed. I met with another

corpſe

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RELIGION. *orometùa*, of which mention has been made before p. 542. After this burial of the bones the relations now and then renew ſome funeral ceremonies with the prieſt, who takes a bunch of the red feathers of a parroquet called *oòra*, and twiſted together with cocoa-nut filaments, and fixes them on a ſmall pointed ſtick in the ground; (theſe feathers are in high eſtimation with theſe people and become the emblem of the divinity, and ſerve to fix their attention during the ceremony) oppoſite to this bunch of feathers a young plantane is placed, which is the emblem of friendſhip, peace, and expiation; the prieſt ſtands with the relations over againſt

corpſe in a little houſe of wood ſix feet long and two feet wide, and when I came near a fox eſcaped out of it, who had been preying on the dead body: beſides the vanes above mentioned, the khalmyks had fixed about this ſepulchre pieces of wood piereed in the middle by a hole, through which the ſticks were thruſt on which the wooden vanes almoſt conſtantly moved by the leaſt breath of wind; theſe pieces of wood were on the two oppoſite ſides hollowed out like ſpoons of about ſeven or eight inches long and five wide, and covered on the hollow part with Tibetan characters. The lamas or prieſts of the khalmyks ſay that as often as the vane or this wooden inſtrument moves round, the ſubſtance of the prayers for the repoſe of the deceaſed, is as it were offered up to God. In the *Archæologia* of the Society of Antiquaries of London, vol. ii. p. 233. is inſerted a Memoir, written in 1767; wherein I have deſcribed the ſix modes of burial uſual among thoſe who follow the religion of the Dalai-lama. According to the firſt mode they burn the corpſe of their Lamas, Khans, Noions, and other people of rank, and preſerve their aſhes mixed with frankincenſe, and ſend the whole to the Dalai-lama in Tibet. 2. They keep the bodies in a coffin and afterwards cover them with ſtones. 3. Some are carried to the tops of mountains, and left there a prey to birds and beaſts. 4. Some are carried to an incloſure full of dogs, and there the burier feeds the dogs with the fleſh ſevered from the bones, and caſts the bones

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againſt the bunch of red feathers and repeats his prayers, after which he depoſits on the grave ſome coconut-leaves twiſted into various ſhapes and knots during his prayer, and the relations likewiſe leave a few proviſions. RELIGION.

Inſtead of a man, I ſaw at *O-Taha* a woman wear the heva-dreſs; a ceremonious dance was performed at the ſame place, and the neareſt relations appeared well dreſſed with preſents of cloth for the drummers and muſicians. From all the ceremonies of the burial it appears, that the people at Taheitee and its neighbourhood, have an idea of a ſeparate ſtate, in which the *Teèbee* or ſoul

bones into the water, and gives the ſkull to the relations of the deceaſed, who carry it reſpectfully home. 5. Some corpſes are thrown into the water. 6. Others are buried under ground. The mode of burial is fixed and determined upon by the prieſt according to the hour in which a perſon dies, as each time requires a different way of burying. Theſe circumſtances are confirmed by *Dr. P. S. Pallas*, F. R. S. in his *Travels through ſeveral Provinces of the Ruſſian Empire*, vol. i. p. 362, 363. and partly by *John Stewart*, Eſq. F. R. S. *in his account of the Kingdom of Tibet, in the Philoſ. Tranſ.* vol. lxvii. pl. ii. p. 478. In the iſland of Formoſa or Tayovan the inhabitants keep the corpſes of their deceaſed in their houſes on an elevated ſtage, and put fire under them in order to dry them, after the ninth day they wrap the body in mats and cloth, and expoſe them on a ſtill higher ſtage; after the body has been thus kept during three years the bones are buryed. *Relation of the Iſland of Formoſa by Candidius.* The people in Corea do not bury the remains of their deceaſed friends till after three years are elapſed. *Du Halde's Hiſt. of China.* The indians upon the river Oronoko ſuffer the corpſes of their chiefs to putrefy and when the fleſh is decayed they dreſs the ſkeleton with jewels of gold and ornaments of feathers, and ſuſpend it in a hut. See the *Voyage of Sir Walter Raleigh in Hakluyt's Voyages*, vol. iii. p. 644. edit. 1598. *Appollonius Rhodius Argonautic.* lib. iii. p. 207. and likewiſe *Ælian. var. Hiſtoriæ*, lib. iv. ch. i. mention that the Colchi ſew the corpſe of their deceaſed relations in raw

RELIGION. lives though not united with the body. I was not able to discover when they supposed the soul removed or left the neighbourhood of the corpse and the bones. For it has been already observed, that they imagine that the chiefs and better sort of people go to *Mdouwe* into the sun and feast on bread-fruit, and meat of dogs and hogs, which requires no dressing, in the assembly of heavens or *Te-roòa te-rai*. The time when the deceased are thought to go to this assembly remains therefore unsettled. * The Egyptian doctrine of the transmigration of the soul has been, I believe often mentioned, but seldom understood. The Egyptians were of opinion, that the soul of man was obliged after the DECAY of the body to animate the bodies of animals, birds, and fish, till after a revolution of three thousand years the same soul again resumed

raw hides of oxen, and hang them up by a chain in the air. The inhabitants of Chili put their deceased in the attitude of a child in the mother's womb, and then they expose them on a stage six feet high. *Supplement to Anson's Voyage.* All these accounts evidently prove, that many nations observe the same custom with regard to the corpses of their deceased friends as at O-Taheitee, in exposing them to putrefaction and afterwards burying the bones only. And though some of them differ somewhat in their method of treating the remains of their relations, there are however others who do not bury them under ground, but sever the flesh from the bones, and preserve the skeleton dressed out and finely ornamented in caves under ground, (such for instance are the customs of the Moluches, Taluhets, and Divihets) or in small huts near the sea coast, sometimes at 300 leagues from their habitations, (which is done by the Tehuelhets) See *Falkner's Description of Patagonia*, p. 118, 120.

* We shall in the next chapter give an account of the doctrine of the soul as it is received among the inhabitants of the Caroline islands, which can be employed for the illustration of the doctrine of the Taheiteans.

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RELIGION.

resumed the direction of a human body. * They embalmed the body of the deceased, in order to hinder its decay and putrefaction, and to prevent the tedious transmigration of the soul through so many bodies of animals, and to facilitate its transition from one human body (after the interval of 3000 years) into another. † This doctrine has furnished a hint for fixing with some probability, the time of the departure of the souls of the Taheiteans for the *Te-roùa-te-raï*; it seems to me to take place when all the flesh is entirely decayed, and nothing but bones are left. The difference between the doctrine of Egypt and that of Taheitee is evident and needs no comment, but it appears that they agreed in thinking the soul to remain about the body as long as any flesh continued unde-

* Herodot. lib. ii. N°. 123.

† During all that time in which the body was not decayed the Egyptians imagined the soul to remain near it. At Memphis especially was a lake between the burying place and the city, and close to it a fine green meadow, which was the ELYSIUM: for so Servius remarks ad Æneid. vi. *Virèta prope Memphin amœna sunt, in quibus Ægyptiorum sepulcra sunt, hæc Elysios campos vocant. Palus prope est, loto & calamis plena, & graviter olet. Per hanc paludem vectantur cadavera; hinc dixit Orpheus,* vehi per Acherontem. *Hom.* l. 4. *Odysseæ, ubi loquitur Proteus: sed te Elysium campum, & ultimas terras Dii immortales mittent,* &c. &c. Homer in the Odyssey, Ω 13. calls it:

- - - - - ασφοδιλον λειμωνα

Ενθα δε τε ναιουσι ψυχαι - - -

A meadow full of herbage, where the soul lives. The words Αχιρουσιη and *Elysium*, have their origin from words in the Egyptian language, which have a reference to *fertility*, *grass*, and *rushes*. Near it were the πυλαι πυλαι the ports or gates of the sun, i. e. of a temple of Serapis or the sun, and λευκας πετρας or that part of the city of Memphis called *Leucotichæ* by Thucydides, lib. i. c. 104. The marais of the Taheiteans are constantly near the sea, in a pleasant spot, surrounded by verdure and fine shady trees.

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RELIGION. undecayed. I am far from thinking that the people in the South Sea derived their ſepulchral rites, and their opinions relative to the ſoul from Egypt, for I have frequently obſerved that the ſame cuſtoms are obſerved at very diſtant places. It is therefore poſſible that mankind may have accidentally employed upon certain occaſions the ſame cuſtoms without having an opportunity of borrowing them from places ſo very remote.

In the Friendly iſles, (though we twice viſited them) we made a very ſhort ſtay, ſo that we could not make many obſervations on their religion and the rites and ceremonies that are in any ways related to religion; however we find they uſed the word *Eatoòca*, we ſaw one of their prieſts perform ſome rites, and heard him repeat a long prayer, oppoſite to one of their burying places, called by them AFFAYETOÒCA. * I was told that they buried the remains of their deceaſed friends within the houſe or *Affayetoòca*, which was filled with pieces of coral ſtone. I found in the houſe two rude figures of a man ſimilar to the *Teèbee* at Taheitee. I inquired whether they called it an *Eatoòca*, they ſaid no; I again aſked how they called it, and I was told *Teèghee*; I inquired whether they prayed to it, this they denied, and kicked the figures with their feet, to ſhew that they did not pay the leaſt reſpect to them. In

* The name *Affayetooca* ſeems to ſignify *the houſe of God*: for *farre* is a houſe in the Friendly-iſles and *E-atooca* is the name of God, which would form the word *E-farre-tooca* or *E-ffaye-tooca*.

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In New-Zeeland, the people were very ignorant in regard to religion, however they had the names of *Eatoòca* and *Teèghee*, which latter they repreſented by a ſmall ill ſhapen figure of a man, cut in the green nephritic ſtone, and this they commonly wore on a ſtring round their necks: for as they have no fixed place of abode, but are conſtantly removing, they cannot erect a figure of a *Teèghee* on a certain place, leſt it ſhould be deſtroyed by ſome hoſtile party: another reaſon for doing ſo is, becauſe they never bury the corpſes of their deceaſed relations, but ſink them with ſtones in the ſea; it is therefore impoſſible to riſe any other monuments to the memory of their friends, than ſuch as they can wear and carry along with them. They likewiſe wear in commemoration of their deceaſed relations ſome of their teeth about their neck; I have ſeen ſome men and women wearing whole ſtrings or necklaces of teeth about their necks. RELIGION.

In Eaſter-iſland they bury their dead near the ranges of gigantic ſtone figures, which ſerve in lieu of the wooden Taheitean *Teèbees*, (becauſe wood is extremely ſcarce on their iſland) for I was told that theſe figures repreſented their deceaſed chiefs or *bareekees*; I obſerved many human bones ſcattered on the ſurface of the ſtone parapet wherein the ſtone pillars were erected. I meaſured a thigh bone by my own and found them nearly of the ſame length.

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RELIGION. At the Marqueſas we diſcovered no ſigns of their burying places, as none of us penetrated to the top of the hills, where we diſcovered from on board the ſhips ſome long ſtakes ſtanding upright, nearly in the ſame manner as the *Teèhees* at Taheitee, and which by ſeveral were conſidered as fortifications. Mendaña ſaw in the year 1595, in the ſame iſland, not far from the town, ſomething which he calls "an oracle, ſurrounded with paliſades, "with the entrance to the Weſt, and a houſe almoſt in the middle "with the door to the North, in which were ſome figures of wood "ill wrought, and there were offered ſome eatables, among which "was a hog; this the Spaniſh ſoldiers took down, and wanting "to take away other things, the Indians hindered them, ſaying "by ſigns, that they ſhould not touch them, intimating that they "reſpected that houſe and figures." * From this account it appears to me evident, that the place they ſaw was a place of worſhip and burying, or in a word a marai. It likewiſe ſeems to intimate, that they had the ſame manner of worſhipping, the ſame offerings of hogs and other eatables, together with the wooden Teèhees as at Taheitee, and that the whole of their religion and notions of divinity are nearly the ſame as in the Society-iſles.

On Mallicollo we made no obſervations either on the religion or worſhip of its inhabitants, as we ſtaid only one day on the iſland.

I have

* Dalrymple's Collection of Voyages, vol. i. p. 68.

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I have not the leaſt doubt that the hymns which ſome of the inhabitants at Tanna ſung every morning at day break, were part of the worſhip they paid to the divinity, as the ſolemn tone, and ſtated regularity with which it was heard, ſeem to confirm this opinion. Of their manner of burying we ſaw not the leaſt veſtiges. At New Caledonia on the ſummit of a barren hill we obſerved ſtakes ſtuck in the ground, with branches on the top, and a whiſp of dry graſs, and we were told that this was one of their burying places: cloſe to the ſea-ſhore we ſaw likewiſe an incloſure made of ſticks, round a tumulus of about four feet high, on which were placed ſeveral ſticks, on the tops of which ſeveral large *turbines* were ſticking: and we were informed by the natives that this was the burying place of the chief of the diſtrict. On the iſland of *Ballabeea* lying to the N. W. of New Caledonia, our people, who were ſent there by Captain Cook, found a large ſepulcral tumulus of one of their chiefs, who was killed in battle by the inhabitants of *Mingba* or *Minda*, a great iſland ſituated Northward or North Weſtward of their own iſle, and whoſe natives were warlike and at war with them. Laſtly I found ſome miles from the place where our ſhip was at anchor at the foot of the large ridge of hills running along the whole iſland, a houſe of one of their chiefs, and behind it a range of wooden pillars, about ten or twelve inches ſquare, and eight or nine feet high, with a

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RELIGION. carved human head on the top. The old man who lived in the above houſe, intimated to me by ſigns, that it was his burying place, but as we were then in queſt of *Heebài* the Captain's friend, in order to preſent him with a boar and a little ſow, I had not time to inquire more particularly, eſpecially as it was the laſt day before our departure, and I was deſirous of collecting ſome birds and plants which I had ſeen, and which were not eaſily to be obtained. Theſe ſepulcres with the carved figure of a human head, ſeem to intimate that the natives of this iſland had almoſt the ſame manner of burying the dead, and of fixing a human figure or a *Teèbee* near it, as the inhabitants of Taheitee.

The whole account of the religion, worſhip, and various rites in uſe among the inhabitants of the iſlands in the South Sea, ſhew that it is the leaſt exceptionable ſyſtem of polytheiſm. It has the ſtamp of all the inventions and works of mankind in its imperfection and error; but it is in my opinion leſs cruel, and not ſo much clogged with ſuperſtition as many others, which were or ſtill are in uſe among nations who are reputed to be more civilized and more improved. Their religion requires of its votaries a kind of worſhip, it teaches them to look upon the deity as the giver of all good gifts, as the being who hears their prayers, and is willing to aſſiſt mankind when invoked, and to reward the good: and theſe doctrines afford the only origin of all honeſty, faith, and juſtice; or in a word

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word of all ſocial ties and ſocial virtues, without which there would be no comfort, and ſtill leſs real happineſs in human ſocieties. RELIGION.

Atque haud ſcio, an pietate adverſus Deos ſublata, fides etiam, & ſocietas humani generis, & una excellentiſſima virtus, juſtitia tollatur.

M. TULLUS CICERO, *de Nat. Deor.* l. i. p. 7. *Elzev.*

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SECTION. X.

Recapitulation. General View of the Happineſs of the Iſlanders in the South Sea. Short comparative view of various Manners and Cuſtoms uſual in the South Sea Iſles, with thoſe of other nations.

NEC SOLUM IN RECTIS, SED ETIAM IN PARVIS ACTIBUS INSIGNIS EST HUMANI GENERIS SIMILITUDO,

M. Tullus Cicero, De legibus, l. i. p. 305. *ed. Elzevir.*

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HAVING finiſhed our obſervations on the inhabitants of the iſles in the South Sea, we have only to bring into one point of view what has been the reſult of nine long diſſertations, in order the better to form a juſt idea of their real happineſs.

The inhabitants of the iſles in the South Sea which we viſited, are upon the whole very numerous. We found that the farther the nations live from the equinoctial line, the leſs numerous they are, and of thoſe within the tropics, they are the moſt numerous who are more civilized than the reſt. Though it be highly difficult to aſcertain the population of Taheitee, it is however poſſible to form an idea, which comes very near to its real numbers. We took an opportunity of making ſome inferences from the number

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of war canoes, which we ſaw reviewed, and confirmed our concluſions by a view of the ſize and extent of the fertile plain ſurrounding the iſle, by calculating the number of bread-fruit trees growing on this plain, and the quantity of breadfruit-trees neceſſary for the ſupport of one man, ſhewing that many more men might receive ſubſiſtence than we had allowed. This ſtandard afforded us a rule wherewith to compare or to meaſure the population of all other iſles; and laſtly we ſuppoſed more than one million of inhabitants to live on the iſles which we had ſeen and viſited. We obſerved, that the inhabitants of the iſlands in the South Seas are remarkably different in colour, form, habit, and natural turn of mind; and that the people at Taheitee and the Society-iſles, with thoſe at the Marqueſas, the Friendly-iſles, New-Zeeland and Eaſter-iſland ſeem to conſtitute a race of men entirely different from thoſe at New-Caledonia, Tanna and Mallicollo, and all the reſt living in the New Hebrides. We added a ſmall account of the Peſſerais, prefixing to it a diſſertation proving the exiſtence of a nation taller and more athletic than the reſt of the American tribes; though not ſo tall as the fabulous accounts of a gigantic race would make them. The cauſes of the difference obſerved in the races of men are the ſubject of another ſection. Some ſuppoſe men to be divided into ſpecies materially and eſſentially different from one another. Others on the contrary

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are of opinion that ſome races of men as well as the Ouran Outangs are different from us, which however is inadmiſſible if we take into conſideration the exerciſe of reaſon and common ſenſe, the formation of ideas, the language of the heart, the refinement of moral ſentiment, with the gifts of ſpeech founded on the variety, power and extent of voice and articulation, and even on the whole ſtructure and mechaniſm of our bodies. The other propoſition, according to which men are of different ſpecies, is equally groundleſs, becauſe the moſt different ſpecies can procreate children, and if the different marriages with perſons of one kind be continued for a few generations, the difference at laſt entirely vaniſhes. The objection that this difference is ſo great, that it remains incomprehenſible how it was originally produced is examined, and it is proved that it intirely depends upon phyſical cauſes; it is likewiſe ſhewn that the tranſition from a fair to a dark complexion is very ſoon brought about, but the contrary requires a longer time, and the interval of more generations, and even then is ſcarcely obſervable: ſo that if the ſame race of people ſhould paſs through a long and gradual circuit, the one through hot countries, and the other immediately by a ſudden tranſition to the ſame climate; thoſe who have paſſed through the fervid climate, would preſerve a darker hue, than thoſe who at once ſhould paſs to the ſame without making any ſtay in the intermediate climates;

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and both would afterwards in the new climate preſerve in ſome meaſure the hue and complexion they brought from the country which they left laſt: upon theſe premiſes we ventured to ſuppoſe that the two races of men in the South Sea arrived there by different routs, and were deſcended from two different ſets of men. This ſurmiſe might be rendered more probable and ripened as it were into fact, if any record or hiſtorical proof could be alledged in favour of this opinion: but how can we expect to find ſuch hiſtorical proofs, where no records are kept? However the five nations of the firſt enumerated race ſeem to come from the Northward and by the Caroline-iſlands, the Ladrones, the Manilla and the iſland of Borneo, to have deſcended from the Malays: whereas on the contrary, the black race of men ſeems to have ſprung from the people that originally inhabited the Moluccas, and on the approach of the Malay tribes withdrew into the interior parts of their iſles and countries. The language of theſe two races in ſome meaſure proves the aſſertion, eſpecially as it is evident that the five firſt branches ſpeak only dialects of one *general language* preſerving ſeveral words of the Malay-language; whereas the three tribes of the latter race, have not even a ſimilarity of ſpeech among themſelves; and that none of theſe languages has the leaſt or moſt diſtant reference to any American language ſpoken on the Weſtern coaſts of America. When we conſider the difference

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in the happineſs and enjoyments of the various tribes who were viſited by us in the courſe of our circum-navigation; it is evident that the nations become leſs happy in proportion as they are removed from the tropics and the benign influence of the ſun. The warm tropical climates ſeem to have been originally the ſeat of the human race, which removed to the two colder extremities of the globe, when forced either by chance or cruel neceſſity; the wretched and uncomfortable ſituation of the Peſſerais and New-Zeelanders, when compared with the real ſtate and enjoyment of the Taheiteans, clearly prove that theſe tribes are really debaſed and degenerated from their original happineſs, and that the rigours of the climate firſt influence the body and afterwards the mind and the heart. But if we compare the inhabitants of the more Weſtern iſles in the South Sea with the Taheiteans, we find that the latter far ſurpaſs the former in every reſpect; which intimates that though the climate greatly influences the happineſs of a nation, it is however not the only cauſe of its real felicity; that education contributes as much, if not more, towards the good ſtate of a people; and that the removal from the tropics towards the colder extremities of the globe, together with the gradual loſs of the principles of education greatly contribute to the degeneracy and debaſement of a nation into a low and forlorn condition. Mankind is therefore to be conſidered in various ſituations, comparable with

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the various ages of men from infancy to manhood; with this difference only, that men in their collective capacity ripen but slowly from animality, through the states of savages and barbarians into a civilized society, which has again an infinite variety of situations and degrees of perfection. It is therefore not to be expected, that from a short and slight intercourse with Europeans these nations should make a rapid progress in civilization and happiness, especially as other concurrent circumstances on our side were against it. We then returned to a comparative view of the Pesserais and the Eskimaux, and found the former to be in the lowest state of degeneracy and debasement. The New-Zeelanders we observed to be infinitely superior to them: we then took a view of the most probable means by which the poor Pesserais may one day or other emerge into a state one degree, at least more remote from their forlorn condition, and that the increase of population and want of food may prompt some tribes to oppress others; who either will unite in order to resist their oppressive brethren, or reduce them to subjection; in both cases they must become less unhappy. The barbarian is capable of strong exertions of physical and mental powers, and though outrageous and violent, is forced by the resistance of others to be guarded and cautious, and to unite with others into societies, which sooner or later introduce a mildness of manners, so that even the very unbounded and irre- MANNERS COMPARED

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siſtible eruptions of their paſſions in the end ſerve to ſoften their fierceneſs and ferocity. Canibaliſm, one of the moſt inhumane and atrocious cuſtoms, is not introduced into large ſocieties by want and hunger, but by the moſt unnatural and violent ſpirit of revenge, and muſt after ſome time be laid aſide as a cuſtom which is inconſiſtent with itſelf. In order to judge of the happineſs of mankind, it is neceſſary to define the various kinds of happineſs they are capable of, in regard to their different faculties and ſtate. The moſt preſſing wants which are to be ſatisfied firſt, are food, habitation, and raiment; and an eaſy method of procuring them, together with the advantage of being free from bodily pain, is the firſt principle of *phyſical happineſs*. The means of improving the intellectual faculties, and of preſerving the rights and privileges of a free agency in man, without interfering with the happineſs of others, form the principles of *moral happineſs*. The advantages ariſing from the union of men in ſociety, and a certain undiſturbed enjoyment of phyſical and moral happineſs, in conjunction with others, form the principles of *civil or ſocial felicity*. Each ſtate requires certain duties without the fulfilling of which, no happineſs can be obtained. And the various kinds of happineſs have likewiſe various degrees, in the number and variety of enjoyments, in their long and undiſturbed duration, and in the influence they have upon the happineſs of others. Nature alone promotes in ſome climates theſe various kinds and degrees of happineſs; in ſome nature aſſiſted by

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by art, can produce these effects; and lastly, in others creative physical power and creative genius can only bring about such desirable ends. These general principles convince us of the various kinds and degrees of happiness in the various tribes visited by us in the South-Seas. The great increase of population in an isle of some size, made it necessary to unite into societies for mutual defence and assistance, and gave rise to the formation of property, and exerted cultivation. This required laws and regulations, and persons who should superintend their execution; anarchy reigns among the barbarous tribes, and despotism takes place among those which are more civilized and nearer related to Eastern despotic countries. Cultivation enables mankind best to enjoy the highest degree of happiness, and it is therefore preferable to the rambling state of shepherd nations, or what is still worse, the wild tribes that live by fishing and hunting. Men in society advance towards perfection by a strict regard to truth or *candour*, by *humanity*, and by perfecting their *moral ideas and moral sense*, of which various examples are produced among the inhabitants of the South Sea. The characteristic actions of people, form their *manners*, which accordingly are described in the nations we saw, together with the refinements in their manners, and even their luxury, with some account of the probable origin and progress of their *Arreoys*. The situation of the fair sex in the various tribes we saw, is represented; they

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are ſlaves and drudges among the ſavages and barbarians, but upon a greater equality with the males in Taheitee, and the iſles occupied by the fair race of men in the South-Sea. Marriage is kept ſacred among all thoſe nations whom we found to be monogamous. At the ſame time that we mentioned various inſtances of *Polygyny*, of which the conſequence ſeems to be a greater proportion of women born, we endeavoured to point out the moſt probable cauſe of *Polyandry* now perhaps exiſting at Eaſter-iſland. The young women at Taheitee, before marriage, are under no reſtriction; but chaſtity after puberty and marriage, is highly honourable. The advantages of education conſiſt chiefly in perpetuating the joint ſtock of knowledge of our fore-fathers, and making occaſional additions. In Europe, this knowledge is ſub-divided into various branches, and cannot now be loſt, becauſe the art of printing, ſo happily diſcovered, is ſo univerſally practiſed.———But the iſlanders are conſtrained to teach their mechanical arts, eſpecially ſuch as are neceſſary for procuring food, and conſtructing their habitations, to every individual from the Prince to the ſlave. Hiſtorical records they have none, if we except a few verſes made occaſionally to perpetuate the names and actions of ſome individuals. They are acquainted with the polite arts of muſic, dancing, and poetry, of which a few outlines are given, particularly of their extemporaneous verſes and drama. In deſcribing the progreſs they

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have made in the art of medicine, we took occaſion to mention the diſeaſes of the country, eſpecially the leproſy and the venereal diſeaſe, and made ſome obſervations on the latter. Geography, aſtronomy, and navigation, are in ſome meaſure underſtood among them, in confirmation of which the iſles are deſcribed, and our readers referred to a map, drawn according to the informations given by Tupaya; their hours, days of the moon, and the number and names of the moon in their year, are enumerated together with thoſe of the cardinal points, and of ſome ſtars. To their education likewiſe belong the ideas relative to the Deity and religion. Their ſyſtem of polytheiſm is explained, and the names and functions of their gods and geniuſes enumerated, their mode of worſhipping deſcribed, their ideas on the ſubject of the origin of the world and its iſles, as well as of mankind in general, and on their ſtate after death, together with the various rites and ceremonies at birth, marriage and death, are particularly laid open and deſcribed. This general view of the hiſtory of theſe iſlanders, enables us to form a judgment on their real happineſs; which is by no means equal among all the nations we viſited in the courſe of our voyage, but is progreſſively varied from the wretched exiſtence of the poor Peſſerais to that of the unſettled life of the people in the Southern iſland of New-Zeeland; to the more comfortable ſituation of the tribes in the Northern iſle, where the cultivation of ground has taken place, with

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with many regulations for securing their societies against the power and oppression of their neighbours; to the still more happy state of the natives of New-Caledonia and the New-Hebrides, where they depend still more on cultivation, and seem to be less ferocious; to that of the inhabitants of the Friendly-isles, where cultivation flourishes in the most perfect manner, but under the disadvantage of despotism, from their chiefs and their king, or *Latoo-nipoòroo*; to the more increased felicity in the Marquesa-islands, where cultivation is well understood, but not in so high a degree as at the Friendly-isles, though their government is upon a more liberal plan; and at last to the degree of happiness which undoubtedly is highest among all the isles of the South-Sea, at Taheitee, where the mildness of the climate, and of government, concur with the greater extent and fertility of the island, the gentle temper of the inhabitants, and their courteous manners and improved minds, to increase their happiness, and make it most conspicuous and lasting.

The first view will convince the unprejudiced observer, of the great happiness which reigns at O-Taheitee and the Society-isles. All the inhabitants are of an agreeable temper, and lovers of mirth and joy; I never saw any one, of a morose, peevish, discontented disposition in the whole nation; they all join to their chearful temper, a politeness and elegance which is happily blended with the most innocent

simplicity

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simplicity of manners. Their youth shews indeed a great deal of levity, which with a maturer age, ripens into a more placid countenance and behaviour; and experience, together with their good natural parts endow them with true prudence and solidity for their conduct in life. MANNERS COMPARED

They are possessed either of land as their own property, or enjoy a sufficient share of fruits and roots in lieu of the cultivation of the lands belonging to their chiefs, to whom they give likewise a share of these productions. The great fertility and mildness of the climate, reduce the number of their wants, and at the same time afford them after a very moderate labour, a great affluence of food and raiment, and very neat habitations, well adapted to the climate. The pampered epicure in Europe knows hardly the multifarious ingredients of his disguised ragouts, and his palled appetite remains indifferent to the almost infinite variety carried to his table from every quarter of the globe; nor has he the satisfaction to know how or where these things are produced, or manufactured, while the more happy inhabitant of Taheitee plants his own breadfruit tree, and plucks the fruit for his own use; the banana tree raises by his industry and care, its elegant stem, its picturesque leaves, and the delicious fruit all in one year; the yam, the eddo, the tacca and many other roots are the produce of the soil cultivated by his own hands: he catches the fish for his dinner, his wife rears and feeds the dog,

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the hog, and the fowl, which on great occaſions ſerve for his meal; in ſhort, there is not a ſingle article of his food, which owes not its exiſtence to his or his fathers induſtry or care; who planted the trees, which furniſh cocoas, apples, and other nuts and fruits. In regard to clothes, the Taheitean is moſt certainly happier than the European, whoſe dreſs requires more time, labour, and devices; and to whom folly and faſhion have made many articles ſeem to be neceſſary, which are really frivolous and abſolutely uſeleſs; the Taheitean dreſs is eaſier obtained and made; elegant, ſimple, and anſwering every purpoſe in their ſituation. Their houſes are neat and well ſuited to the climate, and the manners of the nation; I pretend not here to ſay that theſe three great articles, food, raiment, and habitation, are in every reſpect at Taheitee, ſuperior to our food, our dreſſes, our materials, and houſes; it muſt be allowed theſe articles are among us, more ingeniouſly contrived and varied, and better adapted to all ſeaſons, climates, and ranks; but it cannot be denied that theſe people enjoy a happineſs which is more attainable by every individual, for there cannot be an inſtance among them, that ever a perſon died for want of ſhelter, cloth, or food; even the meaneſt obtain their ſhare with great eaſe and in affluence; none is doomed by a hard maſter to perpetual toils and unremitted labour, which requires a continual exertion of all his ſtrength: for the natives work gently, and more for the ſake of

exerciſe

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exercise, than to obtain their livelihood by it. The fertility of the country enables them to satisfy their little wants, and to form societies, where they can mutually assist one another, both by their labour and by the instruction and knowledge, which willingly flows from the lips of their wise men and fathers; they hear the noble actions of their ancestors celebrated by songs, and consecrated by the gratitude of posterity; their minds therefore are early devoted to candour and humanity, to truth and to virtue; their societies are well regulated; their chiefs have a great love and paternal predilection for the happiness and welfare of their subjects, who, in their turn are attached to their superiors by love and a truly filial duty. The vices which are usual among them, are yet so few in number, and of so harmless a tendency that few societies can boast such innocence, and simplicity of manners. Every individual is convinced that the chiefs can have nothing in view in the administration of affairs, but the happiness of the whole community, and the satisfaction and contentment of every individual; and this they prove in return by that exemplary love, attachment, respect and obedience, which they chearfully shew to their chiefs. While the youth of both sexes was singing and dancing, and those of a maturer age, active as well in their duties as enjoyments, we have often seen the venerable hoary senior looking upon the more busy scenes of life with a complacent smile and a serenity, which bore witness to the

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happineſs enjoyed by all ranks and ages: in a word we are perfectly convinced that theſe iſlanders really enjoy a degree of felicity, which is ſeldom obſerved in the more civilized countries, and which is here ſtill more enhanced by the generality with which it is diffuſed over whole nations, by the facility with which it is attainable, and by the juſt proportion it bears to the preſent ſtate of theſe iſlanders, to whoſe condition this happineſs is perfectly adequate, and which if enlarged would become incompatible with their capacities.

We have now and then illuſtrated in notes the CUSTOMS of the natives in theſe iſlands, and repreſented ſome of them to be SIMILAR to cuſtoms which formerly did, or at preſent ſtill prevail among other nations very diſtant from thoſe we had ſeen; but we have alſo collected more of theſe parallel cuſtoms; not always with a view to prove that nations, which chance to have the ſame cuſtom, owe their origin to one another; but rather to convince ourſelves that this ſimilarity does not always give ſufficient foundation for ſuch a belief. At the ſame time we may ſuſpect, that ſome of theſe cuſtoms were really common to two nations, on account of their common origin.

The cuſtom of cutting or puncturing the body with inſtruments dipped in a mixture of water and lamp-black, and forming thereby various figures on the various parts of the body, we found eſta-

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blished all over the islands of the South Sea, with this difference only, that some marked chiefly the face, as the people at New-Zeeland; others imprinted indelible figures all over the body, as at the Marquesas; some produced only large blotches on the buttocks, which is chiefly customary at the Society-isles and Taheitee; others again have only a few black or blue spots on their lips, which is the custom of the women at New-Zeeland. Strange as this custom seems to be, it has been however received among many nations; the Tunguses, * and the Greenlanders † sow into the flesh of the faces of their children, various figures, by a thread dipped into a black substance. The ancient *Huns* formerly were used to make incisions into their cheeks, in order to prevent the growth of the beard. ‡ Though this seems not to be the reason which prompted the New-Zeelanders to cut various deep figures and scrolls into their faces, but rather that of the very obvious ones to making their aspect more terrible to their enemies, and inuring the young men to endure pain; it has however, in the course of nature, produced the same effect, and almost eradicated the hair of the beard. In all America the savages are used to puncture some part of the body with black figures.

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* Gmelin's Voyage to Sibiria, vol. i. p. 77, and vol. ii. p. 648, &c. &c.

† Crantz History of Greenland, vol. i. p. 138.

‡ Ammianus Marcellinus, lib. xxxi. c. 2. and Jordanes Hist. Get.

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Pietro della Valle obſerved the Arabians had likewiſe adopted this cuſtom. The women of the Bedouins of the deſarts about Tunis and Tremeſen punctured their lips according to the teſtimony of Boullaye le Gouz. The Arabian women in Paleſtine uſed the ſame cuſtom as D'Arvieux and de la Roque have obſerved. Beſides theſe black carved ſcrolls on the faces of the New-Zeelanders, we frequently obſerved perpendicular deep furrows marked on their foreheads; theſe however were cut in the phrenzy of their grief, with a ſharp ſhell, for the loſs of a friend or near relation. The O-Taheitean women wound the crown of the head under the hair with a ſhark's tooth, to prove the ſincerity of their grief: and the antient Huns wounded their cheeks on all occaſions, where they wanted to teſtify their grief for the loſs of a great man or a relation. *

The inhabitants of Tanna have on their arms and bellies elevated ſcars, repreſenting plants, flowers, ſtars and various other figures. They are made by firſt cutting the ſkin with a ſharp bamboo reed, and then applying a certain plant to the wound which raiſes the ſcar above the reſt of the ſkin. The inhabitants of Tayovan or Formoſa † by a very painful operation expreſs on their naked ſkins various figures of trees, flowers and animals. The great men in Guinea

* Agathias lib. v. Menander Protector, l. viii. And Sidonius in Panegyrico ad Avitum.

† Relation of Candidius.

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Guinea have their ſkin flowered like damaſk. * And in Decan the women likewiſe have flowers cut into their fleſh on the forehead, the arms and the breaſt, and the elevated ſcars are painted in colours, and exhibit the appearance of flowered damaſk. † MANNERS COMPARED

The inhabitants of Mallicollo and Tanna, wore a cylindrical ſtone in the *Septum narium*; and the ſame part was found perforated in the natives of New Holland, by Mr. Banks and Capt. Cook, ‡ but inſtead of a ſmall ſtone, a bone of a bird five or ſix inches long, and nearly as thick as a man's finger, was thruſt into the hole, and Dampier obſerved likewiſe in the men of New Britain ſuch long ſticks thruſt into the hole of the griſtle between the noſtrils. § In the Friendly iſles the natives had two holes made into the lap of their ears, and they wore a ſmall ſtick ſtuck in theſe two holes; the ſame with a long ſtick were likewiſe found in the ears of the inhabitants of the Iſle of Garret Dennis, near the coaſt of New Guinea. ‖ The people of Tanna, Irromanga, and Mallicollo wore large ear-rings of turtle ſhell of more than an inch in diameter, and three quarters of an inch broad. On their arms we obſerved

* Prevot Hiſtoire des Voyages, tom. i.

† Tavernier's Voyage.

‡ Hawkeſworth, vol. iii. p. 575.

§ Dampier's Voyage, vol. iii. p. 203, and 205.

‖ Dampier ibidem.

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obſerved bracelets of coco-nut-ſhell and ſmall plaited ſhell-work, and we ſaw the hair of the natives at Namocka and the Friendly-iſles, powdered white, blue or orange; the white is no doubt made of ſhell-lime, the orange extracted from turmeric, which affords a very ſtrong and deep colour, but the blue we could never obtain; nor learn how it was manufactured. The Papooas wore rings in the ears, in both noſtrils, and the perforated griſtle between the noſtrils. They uſed bracelets on their arms above the elbow and wriſt, and their hair was powdered with ſhell-lime.* Capt. Carteret obſerved that the inhabitants of the iſles called by him New Ireland and the Admiralty iſlands, powdered both their hair and their beards. † And others have obſerved the natives of Garret Dennis Iſle to dye their hair of divers colours, viz. red, white, and yellow. ‡ The Tripolitan ladies in Barbary ſtrew the hair of their children with vermillion. § The antient Gauls employed the aſſiſtance of art to heighten the red colour of their hair, and the chiefs ſtrewed them with the duſt of gold, ‖ which luxury was likewiſe adopted by the Jewiſh

* Jaques le Maire *dans la Collection des Voyages qui ont ſervi pour l'Etabliſſement de la Compagnie des Indes*, vol. iv. p. 648.

† Hawkeſworth, vol. i. p. 599, and 604.

‡ Dampier's Voyage, vol. iii. p. 202.

§ Etat des Royaumes de Barbarie.

‖ Diod, Sic. lib. v. p: 305. edit, Wechel.

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jewiſh ladies, * and Saint Jerome in one of his Epiſtles piouſly exhorts a Roman lady not to indulge her daughter in theſe faſhionable vanities of the times; *ne irrufet crines, et ſibi anticipet ignes gehennæ.* MANNERS COMPARED

Some nations daub their faces with various colours, either to appear more terrible to their foes, or to compliment their friends with a more pleaſing aſpect. The moſt indolent and miſerable wretches on Tierra del Fuego, uſe ruddle or ochre, and ſome train-oil, to improve their unmeaning phyſiognomy with a brighter glare of dulneſs and ſtupidity. The New-Zeeland ladies never failed to put on the ſame kind of *rouge* mixed with greaſe, before they came on board to offer their uncouth favours to our ſailors. Mr. Hodges being employed to draw the face of one of theſe coquetting ladies, and ſeeing how highly they valued their own bad red colour, immediately mixed ſome vermillion with linſeed oil and daubed her whole face. She was in raptures at this refinement, and all her people of both ſexes admired her charms, which had been thus heightened, but her rouge betrayed all the perſons who had ſacrificed at the ſhrine of the Paphian goddeſs with this fair prieſteſs. Nor is the uſe of the red confined to the ladies only, becauſe the males were if poſſible ſtill more fond of it. But the inhabitants

* Joſephus.

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inhabitants of the iſland of Tanna, were by no means contented with the red colour; they improved upon it, by adding the ſhining black, of a kind of black lead, or black wadd (*Molybdænum plumbago*. Linn.) and a white prepared of ſhell lime, and then laying each on alternately, in oblique broad ſtripes a-croſs their faces. In the Admiralty-iſles, Captain Carteret ſaw likewiſe people, who had marked their faces with white ſtreaks. *

The ear-laps of the people at Eaſter-iſland, and the New-Hebrides, were diſtended to an enormous ſize, ſo as to hang down to their ſhoulders: they uſed for that purpoſe ſome ſcrolls of the elaſtic leaf of ſugar-cane, and this is much affected by ſeveral nations in America, and likewiſe at Siam, where they uſe the ſame ſcrolls of leaves, in order to aggrandiſe the hole; nor is this cuſtom unknown in Africa, where ſeveral negro women uſe large ſolid ear-rings, of ſix inches diameter; † and in the North of Aſia the Mungalic tribes wear ear-rings of about a foot long. On the coaſt of Malabar the holes in the ears are ſo large, that a man's hand may paſs through with eaſe; nor is this a wonder, as their ear-rings weigh ſometimes above two ounces each. ‡

5 The

* Hawkeſworth, vol. i. p. 605.

† Voyage de Brue.

‡ Dillon's Voyage to the Eaſt-Indies; Engliſh tranſlation. London 8vo. 1698. p. 107.

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The nails of the people of quality at Taheitee, and the neighbourhood, are of a great length, ſo that ſometimes the part ſtanding beyond the finger, is equal to one of the joints: the dancing girls, (who are always perſons of quality) have alſo very long nails: and this cuſtom is likewiſe common among the women of the Gold-coaſt in Africa *: the Mandarines in China, carefully preſerve their long nails as a proof or mark of their nobility and rank; and keep on purpoſe ſmall caſes of bamboo over them during the night, to prevent accidents †: in Siam, the dancing girls make uſe of falſe long nails, made of braſs, in order to come up to this faſhion ‡: at Maghindanao, (commonly called *Mindanao*) the nails of the thumb on their left hand are never cut; and the people in Java are ſaid to wear long hair and long nails. §

The figure of the noſe ſeems to have been an object worthy the attention of the midwives at Taheitee; and ſince, they are of opinion that a broad, ſomewhat flat noſe, is ornamental, they depreſs the noſe immediately after the birth of the child, and repeat this action upon the child, whilſt it is ſtill tender, which we have already

* Prevot Hiſt. des Voyages, tom. iv.

† Oſbeck's Voyage to China, vol. i. p. 270.

‡ De la Loubere Voyage.

§ Voyages faits pour l'Etabliſſement de la Compagnie des Indes Orientales (Amſterdam 1702.) vol. i. p. 392.

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ready obſerved, page 556. Though this cuſtom might appear very ſingular, it has been however uſual in other nations. The women of the Hottentots ſqueeze the noſes of their children flat with the thumb: * and in Macaſſar they flatten the noſes of the children, and repeat the operation ſeveral times every day, ſoftening at the ſame time the noſe with oil or warm water. †

It is a kind of luxury introduced at Taheitee, to anoint the hair with an odoriferous oil; and the ſame cuſtom has been obſerved among the inhabitants of the Maldive-iſlands. ‡ The natives of Tanna are remarkable for the growth of hair on their body; we obſerved ſeveral individuals who were very hairy, hardly one part of their body being exempted from this extraordinary growth of hair; for I ſaw one, who was even on his back covered all over with hair. Nor is this uncommon in other places, for the inhabitants of the Maldives were obſerved to be more hairy over the whole body, than the Europeans. ‖

As to defects and diſeaſes, we found ſome in the iſles, which by other navigators had been obſerved in other places. In Tanna we ſaw men and children who could not lift up their eyelids, and were therefore

* Kolben's Deſcription of the Cape of Good Hope, Engliſh tranſlation, vol. 1. p. 52.

† Gomara Hiſtoria general de las Indias.

‡ Pyrard Voyages, vol. i. p. 80.

‖ Idem, vol. i. p. 81.

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therefore obliged to raiſe their heads in order to bring the object parallel with the axis of viſion; and Dampier found this defect among the people of New-Holland. * In the ſame manner the thick elephants leg, which was obſerved at the Society-iſles, and at New-Caledonia, was not uncommon among the Naïrs of Calicut and in Ceylon. †

Nor muſt we forget ſeveral ſtrange cuſtoms which are common to places at very conſiderable diſtances from the South Sea. In Mallicollo the inhabitants were ſhy on firſt approaching our ſhip in their canoes; however, when they ſaw that they were permitted to approach unmoleſted, and with ſafety, they took ſea-water in the hollow of their hands, and threw it on their heads; and when we landed, they deſired us to go through the ſame ceremony, which they intrepreted as an act of friendſhip. The inhabitants of Pulo Sabuda, near New Guinea, uſed the ſame ceremony, as a ſign of friendſhip: ‡ nor is it quite improbable that the Mallicoleſe are the offspring of ſome of the tribes on or near New Guinea; but on the coaſt of Guinea in Africa, the natives will not come into a ſhip, unleſs the Captain firſt come down over the ſide, dip his hand into the ſea, and ſprinkle his own head with it; which they look

* Dampier's Voyage, vol. i. p. 464.

† Francois Pyrard's Voyages, vol. i. p. 280.

‡ Dampier's Voyages, vol. iii. p. 186.

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upon as a ſign of friendſhip, and as an oath or ſuperſtitious ceremony, without which they will not venture to come on board an European ſhip; * however, it is by no means probable, that the people of Guinea had any intercourſe with the natives of New Guinea or Mallicollo.

Captain Cook and Mr. Banks found on O-Taheitee, and in the other Society-iſles, ſometimes the under jaws of their vanquiſhed enemies, hung up as trophies; and the under-jaws of the ſlain foes, are likewiſe hung up before the houſes of the conquerors on the coaſt of Guinea, as marks of honour, and the firſt ſtep gained towards obtaining nobility. †

Having before, (Chap. vi. Sect. iii. p. 281.) hinted at the great probability, that the nations of the firſt race (inhabiting Eaſter-iſland, the Marqueſas, the Society and Friendly-iſlands, and New-Zeeland) are deſcended from ſome of the iſles ſituated to the Eaſt of the Philippines, commonly called the Caroline-iſlands; it might not, perhaps, be improper to give here a ſketch of the manners and cuſtoms of the people living in the Caroline-iſlands, ſince this will carry this probability to the higheſt degree poſſible, as their man-

* Villauld de Bellefond Relation des cotes d'Afrique appellée Guinée (Paris 1669, 8vo.)

† Atkin's Voyage to Guinea, 8vo, 1737, p. 80. and Villauld de Bellefond.

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ners are so similar and so nearly related to those of the people in the islands of the South Seas just mentioned. * MANNERS COMPARED.

The inhabitants of the island of ULEE (one of the Caroline-islands) and its district, are of various colours, some are fairer than the rest, like Mestisos, who have a Spanish father and an Indian mother; others are similar in colour to the Indians at the Philippines; and others again are like mulattoes sprung from a negro and an Indian woman. The most tawny people are of the lowest class, and serve instead of domestics. They all live chiefly upon fish, which they catch in great abundance, upon cocos and seven sorts of roots, similar to those used in the Marian-islands. They have fowls, and catch all kinds of birds especially of the aquatic sort, which they use for food; but they are without any quadruped. The houses of the common people are small cottages covered with thatch of a kind of palm leaves (probably the *Athrodactylis*) but those of their chiefs or TAMOLES are large, painted, and ornamented on the inside. Their boats are high both before and behind, and the planks are sewed together; to one side of the boat out-riggers are fixed, which are also fastened to a long spar placed

* This account of the manners of the people in the new Caroline islands has been abstracted from *des Brasses Histoire des navigations aux terres Australes*, vol. ii. p. 445—511. In order to prevent repetitions, we shall only refer the reader to the passages of this work, to Capt. Cook's Voyages and those of George Forster.

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placed parallel to the boat to prevent its overſetting: at the prow and poop, and likewiſe at each end of an out-rigger, projecting from each ſide of the maſt, are ſmall apartments; the ſails are manufactured of a mat of palm leaves.

The common occupation of men conſiſts in preparing the ſoil for the cultivation of various roots for their ſubſiſtence; for which purpoſe they clear the ground of the woods with their ſtone-hatchets, in a very troubleſome manner, and then ſet fire to the wood when perfectly dry; the ſmoak and fire of which is often ſeen at a great diſtance out at ſea. Fiſhing takes up a great deal of their time, and they uſe for that purpoſe among other contrivances, a baſket. The building houſes and boats together with the making their arms, are likewiſe allotted to the men. The women aſſiſt the men in ſewing and planting their roots, and are beſides occupied in dreſſing their victuals, and preparing cloth from the bark of a *plane-tree*. * The tree called by them *balibago* is likewiſe employed in the manufacture of cloth by their women.

In their domeſtic life they are very ſober and uniform; they riſe with the ſun, and go to ſleep when it ſets. For their meals they keep no regular time, but eat whenever appetite prompts them, and whenever opportunity offers: However they eat but little

* The plane-tree here mentioned is moſt probably the *Morus papyrifera*, ſince its jagged leaves might be miſtaken for thoſe of a plane-tree.

little at a time, and repeat it often. They bathe three times a day, and are always very neat and cleanly. Their king or great chief reſides in the iſle of ULEE, and another lives in that of LAMUREC, and all the chiefs or *Tamoles* of the neighbouring iſles are ſubjects or vaſſals of theſe two kings. Each iſland contains a great many noblemen or *Tamoles* of the royal family and one of them governs the iſle. A kind of gentry inferior in rank are next to the *Tamoles*, and the low people are ſtill more ſubjected; each of theſe ranks of men ſhew great reſpect to their chiefs. MANNERS COMPARED.

Thoſe who are willing to pay a viſit to their chiefs, ſhew their reſpect amongſt others by painting their bodies with a kind of an aromatic yellow paſte; * this is likewiſe obſerved on their feſtivals; but the chiefs are almoſt conſtantly painted in this manner. The raiment of the common people conſiſts of a piece of cloth wrapped round their loins and thighs, part of which paſſes between their legs. The women are dreſſed in the ſame manner, with this difference only, that the cloth reaches down to the middle of their legs, whereas that of the men hardly covers the knees. The upper part of the body is naked; however ſometimes a kind of cloak with a hood to it is worn by them over their ſhoulders. The chief wears a piece of cloth with a hole cut in the middle of it, through which

* In the Friendly iſles, Eaſter Iſland, and all the New Hebrides, they ſtain their bodies and cloth ſometimes with a yellow aromatic powder, extracted from turmeric.

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which he puts the head, and has one part hanging down the breaſt and to the knees, and the other reaching as far down behind. The women wear bracelets of tortoiſe-ſhell above their elbows, and in their ears, rings made of the ſame ſubſtance, in which they ſometimes put odoriferous flowers, or ſmall beads of coco-nut-ſhells. The men uſe a kind of cap or fillet, made of plaited filaments, ſtuck round with birds feathers ſtanding upright. Their body is marked with various lines diſperſed in various compartments, but the women and children are without them. They are a ſet of people having well-proportioned limbs, but their chiefs are remarkably tall and luſty, their hair is black, long, and falling in curls; their beards are ſtrong and buſhy, their noſes broad, their eyes large, lively and piercing. In their temper is a mixture of the greateſt good-nature and benevolence; therefore if ever they quarrel, they are never carried away ſo far by their paſſion or hatred as to kill their adverſary: the higheſt pitch of their vengeance is to fight their foes at fiſty cuffs, and as ſoon as ſome of the by-ſtanders interfere and ſeparate the combatants, their anger is over and they are eaſily reconciled, eſpecially by a few preſents made to the perſon offended. If ever any one commits a heinous crime, his puniſhment never extends further than baniſhment to one of the neighbouring iſlands. Though the breach of conjugal fidelity is reckoned a great crime, it is however deemed venial, and the injured huſband eaſily forgets the offence for

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for a handſome acknowledgement: but he is ſtill at liberty to divorce the wife upon ſuch occaſions. The wife is likewſe permitted to ſeparate herſelf from her huſband upon any ſlight offence, diſpleaſure or diſguſt. One curious cuſtom however prevails among them, according to which a man marries the wife of his deceaſed brother, in caſe he has left no children to inherit; this cuſtom, as far as we know, is no where practiſed among the inhabitants of the iſlands which we had occaſion to viſit. The common people are contented with one wife, though it be not unlawful to marry more than one, and with the chiefs and nobles it is looked upon as a mark of rank to have more than one wife; nay, the King of the diſtrict of CITTAC reſiding at the iſle of HUOGOLEU or TORRES, has nine wives. Among themſelves they keep ſtrictly honeſt, and pilfer only from ſtrangers; they covet iron above all things, and every one who obtains ſome, either by purchaſe from Europeans, from ſhipwrecks, or by ſtealth, is obliged to bring it to the chief, who orders ſuch tools to be made of it, as the ſize and form of the iron will beſt admit, and then his ſubjects hire them for their own uſe at a certain price. MANNERS COMPARED

Their benevolent and friendly diſpoſition gives unity and friendſhip to their ſocieties; their lively and joyful temper prompts them to mirth and all kinds of ſports, and the enjoyment of pleaſure; they are amazingly addicted to laughing, and are fond of

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little witty agreeable ſtories of a jovial turn; they ſhew true politeneſs and good breeding in all their manners and behaviour, and ſpeak very pertinently and wiſely on all kinds of ſubjects; their hearts are capable of being melted at the recital or ſight of diſtreſs or wretchedneſs, and a generous tear never fails to ſteal down their cheeks, the tribute of benevolence and humanity. In their ſocial and feſtal meetings, they have much ſinging and dancing. Their females often ſit down in ſmall companies, and ſing languiſhing ſongs, accompanied by motions of the head and hands expreſſive of the ſame ſentiment, theſe they call *Tanger ifaifil*,* or the *complaint of women*. Their ſongs are not without a regular meaſure and harmony, and they beat time by ſtriking their thighs. In their dances the men ſtand in two lines oppoſite to one another; their heads are ſtuck with feathers and flowers, odoriferous herbs hang from their noſes, and from the ears hang down ornaments made of plaited coco-nut filaments. The dances conſiſt chiefly in cadenced, harmonic, and uniform motions of the head, arms, hands, and feet. The chief ſometimes holds up a piece of cloth, which is given to him who firſt can ſeize it, all the competitors ſtarting at the ſame time for it.

6 In

* We have already made uſe of this word, to render our opinion more probable; according to which the nations of the firſt race of people in the South Seas are deſcended from the inhabitants of the Caroline Iſlands. See p. 400.

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In caſe they ſhould be injured by neighbouring ſocieties or tribes, they avenge their wrongs by war. They chiefly uſe lances and darts for arms, which are barbed with points of human bones, and conſtantly exerciſe themſelves in throwing lances and ſtones at a mark. They march up regularly in three lines, the firſt conſiſting of young men, the ſecond thoſe of a middle age, and laſtly the old men ſtand behind, and no ſooner is one of the firſt rank killed, than the man behind occupies the empty place. They have no defenſive weapons, but endeavour to avoid the miſſile arms of the enemy by agility: their wars are by no means bloody and cruel; the death of two or three men commonly decides the victory, and the conquerors announce their conqueſt by a loud triumphant ſhout, and inſulting words againſt the routed party. MANNERS COMPARED

They have an idea of the immortality of the ſoul, and of a ſtate wherein the good are rewarded and the wicked puniſhed. When common people die, their corpſes are thrown into the ſea. But the bodies of their deceaſed chiefs are painted yellow; the aſſembled people cut locks of their hair and beards, and throw them on the corpſe in teſtimony of their grief, to which they add in loud vociferation the praiſes of the dead, and laſtly abſtain all that day from eating. After this ceremony the corpſe of the deceaſed is incloſed in a ſmall ſtone apartment in their own houſes, or buried at ſome diſtance from their habitations and the ſepulcre incloſed in a

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ſtone-wall. From time to time they expoſe near the grave fruits and other eatables, that according to their opinion the deceaſed may ſuck them: for they ſuppoſe the ſouls of thoſe who are gone to heaven, return on the fourth day and live inviſibly among their friends and relations. Theſe ſouls are looked upon as good genii, and in every undertaking they are addreſſed for aſſiſtance and ſucceſs, the prieſts being ſuppoſed to have an intercourſe with them.

Theſe and many other traditional doctrines are communicated by certain teachers to the youth of both ſexes, in houſes appropriated for that purpoſe. The boys eſpecially learn the names and directions of the 12 winds of their compaſs, the names and motion of the brighteſt ſtars; the ſituation and names of the various neighbouring iſles, and by what courſe they muſt ſteer for each of them. The teachers likewiſe communicate to them their traditional doctrines of religion. It is obſerved that though they have no knowledge of a maker of Heaven and Earth, they however acknowledge a good and great ſpirit, who is the great Lord of Heaven, to whom many ſpirits both good and evil are ſubordinate: theſe ſpirits are celeſtial beings different from thoſe who inhabit the Earth, they have a body, and marry in the ſtyle of their chiefs, more than one wife. The oldeſt ſpirit known among them is called *Sabucoor*, and his wife's name is *Halmelul*. Their ſon was *Eliulep*, (i. e. the great ſpirit) and their daughter *Ligobuud*. *Eliulep* married

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married *Leteuhieul*, a woman born in the iſland of *Ulee*, and had by her a ſon called *Lugueiling*, (i. e. middle of heaven) whom theſe nations worſhip as the great lord of heaven, of which he is preſumptive heir: *Leteuhieul* died in the prime of her youth and her ſpirit flew to heaven. *Eliulep* adopted a young man, born in the iſland of *Lamurec*, called *Reſchahuileng*, who, being tired with living on earth, aſcended to heaven, in order to enjoy the delights of his father: his mother being ſtill alive at *Lamurec*, he came to her into the middle region of the air and communicated to her the myſteries of heaven. The ſiſter of *Eliulep*, called *Ligobuud*, finding herſelf with child in the middle region of the air, came down to earth, and brought forth three children. She was aſtoniſhed to find the earth to be barren and dry; by her powerful word the earth was covered with herbs, flowers, and fruit-trees; ſhe covered the earth with verdure, and peopled it with reaſonable men. No death then took place on earth, for in lieu of it a ſhort ſleep befel the men the laſt day of the moon, who revived at her re-apparition on the horizon, as if awaking from an agreeable ſlumber. But *Erigerigers*, an evil ſpirit, who was diſpleaſed with the happineſs of mankind, brought about a kind of death, againſt which there is no remedy, and ſince that time, he who dies once is certainly dead: this evil genius is called *Elus melabut*, (i. e. malevo-

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lent ſpirit:) the reſt are called *Elus melaſirs* (benevolent ſpirits.) *Morogrog*, an evil ſpirit, expelled from heaven, brought fire firſt upon earth. *Lugueiling*, the ſon of *Eliulep*, married two wives, one of celeſtial origin, who brought him two children, *Carrer* and *Meliliau*; the other of terreſtrial origin, born at *Falalu*, in the province of *Huogoleu*, by whom he had a ſon, called *Oclefat*; this young man, upon hearing that his father was a celeſtial ſpirit, attempted to mount to heaven, but fell down and wept: hereupon he kindled a great fire, and went up in the ſmoke to his celeſtial father, whom he embraced. In the iſle of *Falalu* is a pond of freſh water, which the natives fear to approach, becauſe they ſuppoſe the Gods bathe in it. The ſun, the moon, and the ſtars, have, according to the opinion of theſe people, rational ſouls, and are inhabited by numerous celeſtial nations. Theſe iſlanders have neither temples, nor carved or any other images; and they never think it neceſſary to make any offerings or ſacrifices, except a few of them, who ſeem to worſhip their deceaſed friends. At the iſland of *Yap* or *Panlog*, the inhabitants worſhip a crocodile; obſerve incantations making knots of palm-leaves. And to the Eaſt of the five cluſters of iſles, called Carolines, there are many more iſlands, eſpecially that of *Falupet*, the inhabitants of which worſhip the ſhark. *(Tiburon.)*

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These isles are very numerous, and have inhabitants of a brown colour, like those of the coast of Philippines; but the inhabitants of *Panleu* or the *Palaos*, are like negroes, savage and barbarous; they go naked, and are canibals; and are for that reason, detested by the inhabitants of the Caroline-islands, who look upon them as dangerous to deal with, and the fiends of mankind.

The chiefs at the Caroline-islands are much respected; they wear long beards, and sit on a high seat, like a table, and give audience; those who want to talk to a chief, bow very low, then sit down, hear his commands, and go away after another bow, or they sometimes kiss his hands and feet; or they take the foot of the chief gently with the hand, and rub their face with it. They think it likewise a mark of respect to lull the Tamoles asleep by songs.

These few remarks on the manners, customs, opinions, and religion of the natives in the Caroline-islands, if compared with those of the inhabitants of the South Sea isles, of the first race, prove that they bear a strong resemblance; and as this similarity of almost every circumstance can hardly be accidental, especially if we consider the vicinity of both clusters of isles, and the correspondence in the stature, colour, habit of body, and turn of mind of the inhabitants, and the probable successive migration of these tribes from isle

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isle to isle; it is almost beyond a doubt, that they are very nearly related to one another; and that from these Caroline-islanders, the inhabitants of the Eastern South Sea islands were descended at some distant period. This consideration leads us to another, *viz.* that these islanders having no other than vague traditional reports in lieu of historical records, it is impossible to know any thing of their origin or migrations; and that no distant guess or conjecture could ever have been formed unless by paying a particular attention to their peculiar customs and manners, and likewise to their language; of the first we have given as good an account as our historical proofs would admit; the latter some future navigators must investigate more carefully. A stronger proof of the advantages of civilization, cannot be given, than results from this total uncertainty, respecting the origin of these nations: if we have been able to produce any arguments that lay claim to probability, it is because our minds are improved by civilization, and our talents, natural and acquired, have enabled us to form a judgment as nearly approaching to truth as these subjects will allow. Our minds therefore should be impressed with the most unfeigned feelings and acts of gratitude to Providence for the blessings of a more exalted civilization and education, which give us in every respect so great a superiority over these nations, and assign to us so high a rank in the scale of rational beings;

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ings; and how much ought not this to encourage us to act up to this greater knowledge, and to maintain by humanity and virtue the exalted ſtation we occupy. MANNERS COMPARED

Quum natura hominis imbecillior ſit, quam cæterorum animalium, quæ vel ad perferendam vim temporum, vel ad incurſiones a ſuis corporibus arcendas, naturalibus munimentis providentia cæleſtis armavit; homini autem quia nihil iſtorum datum eſt, accepit pro iſtis omnibus miſerationis affectum, qui plane vocatur HUMANITAS, *qua noſmet invicem tueamur.*

LACTANTIUS, lib. iii. c. 17.

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SECTION XI.

On the Preſervation of Health in long Voyages—Account of our Diſeaſes, and the Remedies and Preventatives uſed on our Voyage.

IDEO UTILE EST SCIRE UNUMQUEMQUE, QUID, & QUANDO MAXIME CAVEAT.

Corn. Celſus de Medicina, lib. ii. præf.

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AFTER the diſcovery of America and the Eaſt Indies, by the way round the Cape of Good Hope, the hiſtory of the firſt long navigations, abounds with the moſt melancholy accounts of a dreadful and alarming mortality raging on board the veſſels. Death, in its multifarious and terrible approaching ſymptoms, without remedy, though none of the leaſt ſources of human miſery, is, however, exceeded by the loſs of thouſands of young, hale, and very uſeful ſea-faring men, who, in a great commercial ſtate are an irreparable loſs, and muſt become alarming to the ſtate, either during the time of or on the eve of a war. This mortality was felt again on certain occaſions in later times; and the

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the principles both of ſound policy as well as of humanity, ſhould prompt every man of knowledge, and who has an opportunity of making obſervations on this great and intereſting ſubject, to communicate his obſervations to the public, together with his propoſals for the preſervation of ſo uſeful a ſet of men as mariners are; that thoſe who are intruſted with the conduct of naval affairs, may have an opportunity of trying theſe propoſed remedies and prophylactics, and upon finding that ſome anſwer and others do not, the public may be enabled to profit by their experience, and thus preſerve the lives of many thouſands of uſeful members to ſociety. It has been frequently the practice of the great officers for naval affairs in the various commercial nations, not only to recommend many of theſe things by way of experiment, but likewiſe to encourage thoſe by rewards, who had the good fortune or ſkill to diſcover ſome new method of preventing in any manner the premature loſs of mariners by diſeaſes, eſpecially thoſe of the putrid kind. But none of the maritime powers can boaſt ſo many eſſays, and ſo many ſucceſsful attempts for ſaving the lives of mariners as Great Britain. PRESERVATION OF MARINERS.

The legiſlative and executive branches of government, together with all the public learned bodies, as well as individuals, concurred in this noble and benevolent career. The laſt voyages undertaken under the royal patronage, planned by wiſdom, ſupported by national

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tional munificence, and executed with the moſt indefatigable labour, and a noble exertion of knowledge, experience, and perſeverance, are the moſt undeniable proofs of this ſpirit of emulation, in this important buſineſs to mankind. In conſequence of it, that great and able navigator, Captain Cook, has communicated to the world the method he employed for the preſervation of the healths and lives of his ſhip's company, and its ſucceſs. The Royal Society has crowned his paper with the preſentation of Sir Godfrey Copley's golden medal, to teſtify her approbation of the excellent method propoſed by him. The learned preſident of the Society, has, upon this occaſion, illuſtrated the method uſed by the navigator, with that perſpicuity, learning, experience, and both medical and natural knowledge, which are peculiar to him, and have procured him the merited applauſe of the learned world. After theſe publications it might ſeem ſuperfluous; to ſay any thing more on a ſubject ſo ably ſet forth: however, as I have had frequent opportunities of inveſtigating this ſubject with care and attention, and can give ſome neceſſary details on the preparation and uſe of the antiſeptics; and laſtly, as I flatter myſelf not only to be able to propoſe ſome material improvements on many parts of this method, but alſo to ſuggeſt ſome important hints, which may lead to ſtill greater diſcoveries; I thought it on the preſent occaſion by no means ſuperfluous to publiſh my obſervations and remarks on the

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same subject, hoping that they may in course of time become useful and interesting. I am besides so well persuaded of the candour, humanity and zeal for encouraging every attempt which tends to improve science, and to promote the benefit of mankind both in my friend Capt. Cook and in the learned president of the Royal Society, that I have not the least doubt of being not only absolved by them, of the charge of envy or a desire of rivalship in the same career, but likewise of being commended for being emulous of becoming useful to mankind and perhaps the occasion of saving the lives of many useful and necessary members of society. PRESERVATION OF MARINERS.

The most common and at the same time most dreadful evil infesting the crews of ships sent out on long voyages, is the Sea-Scurvy; which according to the last observations of Dr. Macbride, and those of Sir John Pringle is of the putrid kind. Some authors have assigned the sea-air to be one of its causes, but it is impossible to make good this assertion, since people living near the sea, or in small islands surrounded by the sea and its air, enjoy their health as well as those who have inland habitations. Salt provisions contribute no doubt a great deal towards spreading this disease in a ship, especially if they have been lying for a long space of time in salt and are become putrid; as this must accelerate its symptoms and bring on a general putrescence of the whole habit of

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the human body. But the chief cauſes, originally depoſiting the fomes of putreſcence into our body, have in my opinion, hitherto not been attended to, and ſtill leſs have they been placed in that point of view, in which I flatter myſelf to repreſent it to the public; and which I truſt may lead us to find out the remedies againſt this dreadful ſcourge to ſea-faring people.

We find that the blood of animals imbibes through the lungs a conſiderable portion of phlogiſtic matter; for when a quantity of inflammable air made by pouring ſome weakened oil of vitriol on ſteel filings, contained in a bladder or veſſel, is breathed into the lungs and exhaled again into the ſame veſſel, it not only after 20 or 30 reciprocal breathings ceaſes to be inflammable, but on the contrary will extinguiſh a burning candle put into it; which circumſtance inconteſtibly proves, that the inflammable air, when in the lungs had been deprived of its phlogiſton, and conſequently that the latter had been abſorbed into the blood. That ingenious and accurate philoſopher, Dr. Prieſtley, inferred from the experiment wherein common air becomes, by being inhaled into the lungs unfit for the purpoſes of reſpiration or giving nouriſhment to the flame of a candle, "that the uſe of the lungs is to carry off a "putrid *effluvium*, or to *diſcharge that phlogiſton*, which had "been taken into the ſyſtem with the aliment, and was become, "as it were, *effete*; the air that is reſpired ſerving as a *menſtruum*

"for

" for that purpoſe." * And adds, that what he had before " concluded to be the uſe of reſpiration in general, he had now, " he thinks proved to be effected by means of the blood, in con- " ſequence of its coming ſo nearly into contact with the air in the " lungs: the blood appearing to be a fluid wonderfully formed to " imbibe and part with that principle, which the chemiſts call " phlogiſton." It appears however from the experiment juſt mentioned, and which may eaſily be repeated, that the blood inſtead of diſcharging any phlogiſton, imbibes it only from the air, and at each inhalation decompounds the common air, † which is a compound of *empyreal air*, ‡ (i. e. dephlogiſticated air of Dr. Prieſtley)

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* Experiments and Obſervations on different kinds of air, by Joſeph Prieſtley, L. L. D. vol. iii. p. 56. In the Philoſ. Tranſ. vol. lxi. P. i. p. 226.

† Dr. Prieſtley had no doubt left in his mind, that *atmoſpherical air* conſiſts of the nitrous acid and earth: Prieſtley, vol. ii. p. 55. Mr. Sage in his Elemens de Mineralogie docimaſtique, thinks common air to conſiſt of phoſphoric acid, Phlogiſton and Water, vol. ii. p. 377, 378.

‡ The words *empyreal air*, are uſed in an acceptation, which is not yet adopted as to the compoſition with air: but as this integrant part of air is very pure, *gives life and aliment to flame*, and admits more exhalations from the lungs, before it becomes unfit for reſpiration than common air, it may not improperly be called *empyreal air*: and being a compound of a ſubtle acid and phlogiſton, it is analogous to a *dulcified acid*, which may by a higher rectification become *Ether*. The word ETHER has been adopted in chemiſtry from the notions of antient Philoſophers, who called the ſubſtance they ſuppoſed to exiſt beyond our atmoſphere by that name: and in the ſame manner the more refined and purer regions beyond the atmoſphere were called by the antients the EMPYREAL HEAVENS. It will therefore be no impropriety to call this integrant part of common air, EMPYREAL AIR.

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Prieſtley) and of ſuch air as will not ſupport the flame of a candle. This *empyreal air* Mr. SCHEELE, * has proved to be compounded of a very ſubtle acid and a phlogiſton. Conſequently in every inhalation, the common air yields to the blood its empyreal part, which contains a good deal of phlogiſton, and leaves the reſt unfit for reſpiration. The empyreal air acts as an ether, or dulcified acid upon the lungs and the heart, and conſequently as a gentle ſtimulus. Were the acid too prevalent in its compoſition, it would cauſe convulſions, and too much phlogiſton would likewiſe be hurtful, as we ſhall ſhew in the ſequel. The dulcified acid or ethereal air is therefore found the moſt convenient. All the operations of our body are produced either by chemical proceſſes or by mechanical powers, or both. The empyreal air, on account of its dulcified acid, ſtimulates the heart, and cauſes its continual motion, and on account of its phlogiſton entertains and diffuſes that natural heat, which is abſolutely neceſſary for the functions of life.

All organic bodies both animal and vegetable conſiſt of an acid, ſome phlogiſton and abſorbent earth. The proportions of the integrant parts vary, and are ſometimes modified by additions of ſome other ſubſtances. The addition of food and the attraction of juices

* Chemical Treatiſe on Air and Fire, by Charles William Scheele, Upſala, octavo, 1777. (written in German).

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juices by the roots, are the means of increaſing the growth and ſupporting the life both of vegetables and animals. All animal bodies require a continual ſupply of food, from whence both by a chemical and mechanical operation juices are extracted; which are aſſimilated as much as poſſible to thoſe contained in the body, and rendered nearly homogeneous to its conſtituent parts; theſe juices circulate in the form of blood through the body, and gradually form a ſecretion of various parts, conſtantly depoſiting inſenſible atoms of matter, replacing continually thoſe atoms which are inceſſantly waſted by perſpiration, and friction, by labour, walking, &c. Theſe atoms depoſited by the blood and other juices are analogous to the mixtures contained in the various ſubſtances employed as food; if therefore the acid particles prevail in the nouriſhment, it is an *acidulated diet*; if the phlogiſton is moſt copious, it yields a *phlogiſtic diet*, and if the abſorbents and alkalies preponderate it becomes an *alkaline diet*. Health depends partly on the juſt medium or mixture between the various diets: for according as the quality of the diet prevails in the food, ſo muſt the juices be changed which are circulating in the body, and which afterwards conſtitute the ſolids. If the acids prevail, the fibres of the body become too criſp and much inclined to *convulſive ſymptoms*; if the phlogiſton becomes too copious, *inflammatory and eruptive* diſeaſes may be apprehended, and if the alkaline parts are the chief ingredients of our food, *putrid*

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diſeaſes muſt be the natural conſequences. I wiſh to be underſtood, without miſconſtruction; I pretend not to ſay that an acidulated diet is the only cauſe of convulſive and ſpaſmodic ſymptoms, or the phlogiſtic of inflammatory diſeaſes, or the alkaline of putrid: for there are no doubt many other cauſes productive of the ſame effects, under various circumſtances; nay, there are external cauſes which throw the whole habit into the ſame morbific ſtate that may originate from a certain kind of food.

Freſh food, both of the animal and vegetable kind, contains a proportionate ſalubrious mixture of acids, phlogiſton and alkalies; eſpecially if it be dreſſed without any diſguiſe of rich ſauces, full of ſpice and other ingredients, not properly aſſimilated to our habits; it is therefore no wonder, that *cæteribus paribus*, freſh food is not ſo pernicious as ſalted. But if we examine the water, the fleſh, and all the aliments eaten by the people in ſhips during long voyages; we find that they have loſt that equal mixture of parts, which alone entitled them to the rank of ſalubrious food. The *water*, if ever ſo good when freſh, commonly in a few weeks ſtinks intolerably, eſpecially in hot climates, and is often full of aquatic inſects, and in caſe thoſe inſects periſh in the water, they putrefy, that is, their organic parts are again reſtored to a mixture of their integrant elementary parts; and they form commonly a real liver

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of ſulphur,* whoſe noxiouſneſs and ſeptic quality is well known. The *fleſh* is ſalted in order to preſerve it the longer; but common ſalt is by no means an antiſeptic, when mixed with animal ſubſtances. The latter when dead, by an inteſtine motion of their elementary integrant parts are gradually diſſolved; the volatile parts of phlogiſton, and acids volatilized by phlogiſton fly off; then the volatile alkaline parts leave the maſs; and the remainder is a magma, nearly related to a hepar ſulphuris; which after a ſtill longer period of time becomes an alkali, or an abſorbent earth. The addition of the large quantity of ſalt cannot prevent the fleſh from real putrefaction, but only retards its progreſs. We found, that our meat, which had been really the beſt of its kind, was become in fact very little better than putrid; all its fat had been corroded by the ſalt, and its ſmell, both in a raw and boiled ſtate, was extremely offenſive, though it had been towed in a net of ropes for twenty-four hours at the ſtern of the ſhip; by which operation a great proportion of the ſaltneſs, together with part of the ſtench had been carried off, and the bare tough muſcular fibres ſtrongly impregnated with ſalt alone remained. The gelatinous part, which is the chief nutriment in fleſh, was all loſt, and nothing was left but a ſtrongly alkaline part,

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* Mr. Sage Analyſe des blés. Paris, 1776. 8vo. p. 106. ſeq.

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which is known to be a great promoter of putrefaction. The *bread* is made for the Engliſh navy of wheat, and is baked into flat cakes, without the addition of yeaſt or other leaven. The flatneſs of the bread is the means of excluding moiſture, which would otherwiſe be expelled by fire. It is impoſſible to preſerve the bread againſt the attacks of weavils, which exiſt by thouſands in it. In their larva or grub ſtate they pierce bread very much, and in their perfect inſect ſtate they depoſit their eggs in it. If unfortunately the caſks containing the bread have not been well ſeaſoned before, or are ſtill green, the bread grows mouldy, contracts a muſty taſte and ſmell, and becomes really rotten. If the caſks be good, they are ſtill ſubject to the alkaline and ſeptic effluvia of the putrid water, in the caſks and fleſh, or thoſe from the bilge-water, and the bad air cauſed by the breathing and perſpiration of many hundred perſons, which penetrates to the beſt ſecured and moſt ſecret places, and infects every thing with its ſeptic quality. I need not mention that in ſome few caſes the ſea-water may reach the bread-caſks, which naturally muſt ſpoil them, and woe to the poor mortals who are under the cruel neceſſity of living upon bread affected by ſuch an accident. It is true, all poſſible care is taken to ſecure this moſt neceſſary article againſt ſuch accidents, but I have been told that ſometimes they happen in ſpight of all providential care. White *peaſe* are an article of food daily ſerved at dinner in the

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the form of ſoup; which is, in my opinion, one of the beſt aliments that can be given in long voyages, as they are full of fixed air, and contain likewiſe a conſiderable portion of phlogiſton; they are liable, by the inteſtinal digeſtive fermentation, to part with their fixed air, which is on ſea voyages one of the moſt neceſſary articles that can be found in aliment. We had the misfortune to have on board the Reſolution, peaſe for our proviſion, that had been, I ſuppoſe, kiln-dried; for though they were boiled ever ſo long, they remained whole; the huſk parted, and left the two halves of the peaſe, as hard as if they had only been parched. The peaſe on board the Adventure had not this bad quality, which effectually prevented the eaſy digeſtion of this excellent food: it is, however, of great conſequence to take aliments, which are eaſily digeſted on long ſea voyages, becauſe many circumſtances concur to weaken the digeſtive power of the ſtomach and inteſtines in theſe circumſtances. Government was uſed to allow *oil* to the ſhip's company for making their puddings, and for dreſſing their victuals in ſuch manner as the ſailors like beſt. Captain Cook ſays, *oil (ſuch as the navy is uſually ſupplied with) has the contrary effect*; i. e. is not antiſcorbutic, but ſeptic. From the hint thrown out by this able navigator, it ſhould ſeem that the navy is uſually ſupplied with an oil of inferior

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ſort, and bad quality, either actually rancid, or ſuch as is on the point of becoming ſo. How ill ſuited oil is in ſuch a ſtate to health, I leave to thoſe to judge who know what effects acids have upon our frame. *Wheat* or *oatmeal* are provided for the navy for breakfaſt, and are both moſt excellent aliments for men, who are deprived of freſh vegetable diet, during a long ſpace of time.

We have hitherto examined the food on board of ſuch ſhips as are performing long voyages: we are next to examine the other parts of the œconomy of a ſailor. The great numbers of people perſpiring and breathing in a ſhip, muſt naturally render the air between decks at laſt unfit for breathing; or at leaſt ſo much charged with alkaline and ſeptic effluvia, that it muſt be very difficult to preſerve the health of the ſeamen in the midſt of ſuch a cloud of infecting ſteams; this will become more evident, by conſidering that the bilge-water in the pump-well, is more than ſufficient to fill the whole ſhip with noxious effluvia. After we left Plymouth, in the year 1772, and gradually came into warmer climates, a moſt intolerable ſtench began to ſpread throughout the ſhip; the bilge-water having become highly putrid, and diffuſing its noxious effluvia from the motion, continually forming and preſenting new ſurfaces for the evaporation of the offenſive particles. No parts were more infected by this ſmell, than my own and my ſon's cabins, becauſe they were neareſt to the main maſt, and conſe-

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quently close to the opening of the pumps from whence this horrid stench was communicated to the upper parts of the ship. I was then little acquainted with naval affairs, and communicated accidentally my sentiments to the Captain; he immediately supposed the bilge-water to be the cause, and explained to me the situation of the pump-well, and that all the moisture of the ship must be collected in that place; he added the ship had been detained for such a long space of time at Sheerness and Plymouth, that it was no wonder if the water should have become putrid: its depth was measured, and found to be a few inches high only, which is never thought sufficient to make it worth while to pump it out; the water therefore remained, and the stench continued for some time, till it gradually became less offensive: however I then recommended the use of fire and fumigations between decks as the best remedies against this dreadful stench and the noxious effluvia of this sink. I find by my journal, that my advice was followed during our passage from Madeira to the Cape Verd Islands, anterior to the 8th of August, and that the air was rarefied by charcoal fires, and sometimes by setting fire to brimstone or pitch, or even to a mixture of gun-powder and vinegar.* When this was done, all hands were called on deck, all

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* The friend of Capt. Cook, mentioned by Sir John Pringle in his Discourse, who observed that the old twenty gun ships, had their *galley* or kitchen in the fore-part of the *orlop*, and suspected

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all the ſkuttles and hatchways were ſhut, and the ſmoak confined, ſo that it had time likewiſe to deſtroy the vermin. When this operation was done during winter, I generally found the thermometer in my cabin to riſe, and to remain higher during the firſt twenty-four hours; the difference however ſeldom exceeded two or three degrees: for the fire was made between decks, and the ſmoak only penetrated into my cabin by the chinks and crevices of the deck.

The next object falling under examination, are the *perſons* themſelves ſailing in the ſhip, and their dreſs. In general we find mankind of the ſame turn of mind; among all ranks of men are ſuch as love neatneſs of their perſons and cleanlineſs both in regard to their bodies and their cloths; and likewiſe there are others, who from an invincible connate indolence or ſluggiſhneſs are always dirty, and though they have a ſufficient change they become however ſo uncleanly, that it ſeems almoſt an inherent quality to them; no

ſuſpected this circumſtance to contribute much towards their being remarkably leſs ſickly, than thoſe ſhips of the ſame ſize of a modern conſtruction, is certainly very right in his ſuſpicion. When I was at Plymouth in the year 1772, expecting the arrival of the Reſolution, Dr. Irving viſited with me a Dutch man of war, then lying there: we found the kitchen in the middle part of the *orlop*, ſomewhat before the main maſt, and enquiring how they found the ſhip in regard to healthineſs, when out at ſea for ſome time, we were told, that it was remarkably healthy. The ſmoak was very great and the heat in the middle of a very warm day, was to us, almoſt intolerable between decks.

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no wonder therefore, that perſons of both theſe qualifications ſhould be found in a ſhip's company. The ſame cloth conſtantly put on without any change, muſt very naturally imbibe a great part of the effluvia carried off by perſpiration, and being conſtantly worn, the pores muſt again imbibe the impure vapours; and as the filthineſs in their external behaviour cauſes them to poſtpone their waſhing, many pores muſt by this neglect be ſtopt up, and the inſenſible perſpiration prevented. All which circumſtances contribute greatly towards accelerating the effects of the ſcurvy. PRESERVATION OF MARINERS.

Let us now conſider how far the aliments on board a ſhip can be made antiſeptic in long voyages; for it can be no remedy againſt the ſcurvy to give the patients a ſmall doſe of phyſic; ſince the greater part of the food of a ſailor is either putrid or at leaſt in ſuch a ſtate, that it muſt highly promote and accelerate the putreſence of the whole habit: it becomes therefore abſolutely neceſſary to provide a ſubſtance by way of aliment, which will keep a long while at ſea without decaying, and which will yield in quantity thoſe particles, which are generally wanting in the putrid food. The *fleſh* muſt be ſalted, and of courſe is liable to loſe by lying long in ſalt thoſe particles, which when boiled down, firſt yield a gelatinous ſubſtance, and laſtly a kind of glue, the only nutritive parts contained in all meat; this aliment is therefore one of thoſe which cannot be preſerved in a good condition, be it ever

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ſo good in its kind, and which of courſe muſt become more and more noxious in proportion to the ſpace of time it has been lying in ſalt.

The *bread* is the ſecond article of food, which likewiſe cannot be kept perfectly good for a long ſpace of time; eſpecially the wheaten ſhip's biſcuit is more liable to become mouldy and muſty and worm eaten, than any other of the ſame kind. I have likewiſe found from my own experience, and that of a great many perſons on board our ſhip, that the wheaten biſcuit cauſes obſtructions, and as ſeafaring men are generally inclined to conſtipation, this aliment tends greatly to increaſe the evil. I am therefore of opinion that bread would be infinitely more wholeſome if it be made of rye, or of equal parts of rye and of wheat mixed together, or even of wheat alone, provided the flour be not quite ground fine, and ſeparated only from the coarſeſt bran; and laſtly the bread ought to be made with leaven or ſour-paſte. What convinced me chiefly that theſe precautions would make the bread more ſalubrious, was the experience we had of ſuch bread from the Cape of Good Hope. When we left this laſt mentioned place in November, 1772, we had taken in there as much of their bread as our ſhips could ſtow away with convenience, in lieu of the bread which had been eaten during the paſſage from Plymouth to the Cape. The biſcuit we obtained at the Cape, was made of wheat, which had not been ground into the fineſt flour, nor had the

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the bran been bolted, and it was prepared with ſour leaven. This bread, according to my own experience, and that of many of our ſhip-mates, ſtimulated the viſcera ſo gently that it procured ſtools more regularly than the wheaten biſcuit. The example of the Ruſſian ſoldiers and ſailors, who have no other than rye-biſcuit, prepared with ſour-paſte and of a flour from which hardly any bran has been ſeparated, and who with this bread alone and hardly any other aliment, are healthy, and ſeldom or ever plagued with the ſcurvy, confirmed me ſtill more in my opinion. The only precautions which ought to be taken with this bread are to eat it always after it has been ſoaked, and never when it is quite dry, and ſecondly to bake large loaves of this bread and then to cut them into ſmall cubes of about an inch and an half, and bake them over again. This bread is certainly leſs ſubject to become mouldy or muſty, or worm-eaten; its acidity and hardneſs making it leſs likely to become food for the worms: its coarſer particles ſtimulate the inteſtines and procure eaſy ſtools, and its acidity not only acts as an antiſeptic, but cauſes a greater fermentation with all the other aliments, and conſequently diſcharges more fixed air, which ſweetens and meliorates the putridity of the ſalt fleſh, and with the copious inflammable parts of the peaſe mixes into a food more analogous to our juices and whole animal ſyſtem. The only difficulty I foreſee, will ariſe from its being a novelty, PRESERVATION OF MARINERS.

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and every body verſed in naval affairs will find that no ſet of men are brought with greater reluctance into an innovation than ſailors. But the example of the officers, together with a gentle treatment will no doubt in a little time get the better of this difficulty, and introduce an aliment on board the Engliſh navy, which will greatly contribute to the more healthy ſtate of the ſhips company, and thus preſerve the lives of many an uſeful member to ſociety.

The *ſowerkrout*, lately become of more univerſal uſe, is of ſuch an excellence as an antiſeptic as needs no further comment. Its preparation is well underſtood in Germany, Denmark, Sweden, and Ruſſia; and has lately been ſo well prepared for the King's ſhips in England, that it would be needleſs to dwell on this ſubject: however, as there may be perſons deſirous of uſing this ſalutary food, and at the ſame time ignorant of the method of preparing it, I will here annex the following account: ſolid heads of cabbages are taken and cut aſunder, and then put into a kind of box, running in groves over a machine, ſimilar to thoſe of a leſs ſize uſed for cutting cucumbers into ſlices for ſalad, which of courſe muſt be ſuppoſed to be greater and proportioned to the buſineſs, which is to be performed by the machine. The iron planes for cutting the cabbages into ſlices, are made from 12 to 18 inches in length. While the box is drawn backwards and forwards over this

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this machine; the heads of the cabbages muſt be gently preſſed during the operation, and new ones gradually laid in; by which means the cabbages are cut into thin ſlices, and fall into a large tub, whereon the machine is laid. Theſe ſlices of cabbages are, by ſome perſons, mixed up with ſalt and caraway-ſeeds (*Carum Carvi*, Linn.) or by others with ſalt and juniper-berries, and then beaten into a caſk, or vat, (whereof the head has been taken out) till it yields ſome juice. The inſtrument ſerving for that purpoſe, is either a large club of about five or ſix inches in diameter, or a large and ſtrong butter-ſtaff. Caraway ſeeds are to be preferred to juniper berries; ſince the firſt are very nouriſhing, and ſerve, when reduced into flower, to whole Tartar nations for food, when boiled with mares milk; and becauſe they yield by fermentation, a great quantity of fixed air; and are known to increaſe the milk of wet nurſes; qualities, which alone would be ſufficient to recommend the ſeeds preferably to juniper berries. If the caſk wherein the *ſowerkrout* is to be prepared, has been a wine, or brandy, or vinegar caſk, the fermentation ſucceeds upon the whole better, and imparts to the ſowerkrout a more vinous taſte. Some rub the inſide of the caſk with ſower-leaven, in order to accelerate the fermentation, which latter circumſtance may be omitted, if there is time enough for letting the cabbage go through a regular and gradual fermentation. The ſtamping a new quantity

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of ſowerkrout on the firſt layer of it is always continued, till the whole caſk be full. Then it is neceſſary to bring the caſk, containing the ſliced and ſtamped cabbage, into a place which has a moderate temperature, and, if poſſible, above 50 or 60 degrees of Fahrenheits thermometer: becauſe the warmth greatly promotes, and accelerates its vinous fermentation. As ſoon as it becomes acidulated, which will happen in 10, 12, or 14 days, according to the degree of warmth, in which the caſk is kept, the vat may be removed to a cellar, and there preſerved. In the beginning a quantity of juice is found ſtanding on the top of the fermenting cabbage, and with a ſtick a hole is made in the middle of the caſk for the better circulation of the fermenting liquor. If this cabbage be deſtined for a long ſea voyage, the cabbage is taken out of its juice, and in this dry ſtate cloſely packed in empty caſks: but if it be intended to be conſumed at home, a clean board fitting the caſk, and loaded with weights for depreſſing the fermented cabbage, is put on the top of it. Of ſuch fermented cabbage or *ſower-krout*, about a pint was ſerved to every individual of our ſhip's company, twice or three times in a week; and it is to this moſt excellent antiſeptic, that we chiefly aſcribe the little progreſs which the ſcurvy made on board our ſhip. Our ſhip's company grew at laſt very fond of it, eſpecially when they obſerved its ſalutary effects in preventing the ſcurvy. We had 60 caſks of it on board,

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and about a month before we reached the Cape of Good Hope, in March 1775, the whole quantity was apprehended to have been consumed; and the loss of it was severely felt by our ship-mates. However, when we arrived at the Cape, and all the hold was cleared, we still found two casks, of one of which a part was left, when we arrived at *Fayal*, in the Western islands, in July 1775, and was given away by Captain Cook, to the British Consul, who relished it very much, and it was then found to be as good as when first made in October, 1771. PRESERVATION OF MARINERS.

Another salutary food is *wheat* and *oatmeal*, for breakfast; the wheat being more nourishing, is certainly preferable to the *oatmeal*; but as the *sooins* (a kind of acidulous jelly, and found by experiment to be very antiseptic) is prepared from the last article: it will always be ranked amongst the salutary food of a ship's company.

Pease the common food of sailors is no doubt while fresh and uncorrupted very salutary; however as they abound in phlogiston, and are not sufficiently mixed and rendered analogous to our alimentary vessels, it would not be amiss to allow some vinegar to the sailors for their pease-soup, which by its acidity will correct this excellent food, and by intestine fermentation disengage its fixed air, and render it by this means more antiseptic and salubrious.

Instead

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Inſtead of *oil* it is undoubtedly preferable to allow ſome *ſugar* to people intended to go on long voyages, according to the opinion of Capt. Cook.* Sugar is one of thoſe vegetable ſubſtances, which contain an acid of phoſphorus, and an oily inflammable principle; and which on account of the juſt and proper proportion of the acid and phlogiſton in its mixture, ferments in general more eaſily, yields more freely a vinous fermentation, and when mixed with other ſubſtances which are not in actual fermentation, it ſooner communicates a fermentation to them, than any other known vegetable ſubſtance. This quality no doubt makes ſugar one of the beſt antiſeptics, and its uſe will greatly contribute to rectify the putreſcence of the ſalt food eaten on board a ſhip, and prevent the ſcurvy from breaking out.

The uſe of *ſweet-wort*, or the infuſion of malt, ground in a coarſe manner into *groats* or *grits*, is at preſent ſo generally known to be the beſt prophylactic againſt the ſcurvy, that it would be ſuperfluous to recommend its utility; ſince Dr. Macbride, Sir John Pringle and Captain Cook have put this matter entirely out of doubt. The wort was prepared by infuſing two or three pints of boiling water on one pint of good malt, ground in a coarſe manner: the infuſion was kept in a warm place near the fire of the galley, and

* Capt. Cook's Voyages towards the South Pole, and round the world, vol. ii. p. 290.

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and closely covered to prevent its growing cold: of this liquor the persons threatened by the scurvy drank every day one or two pints warm, two or three hours before and after their meals; those who had already some slight symptoms of the scurvy, drank a quart of this wort, twice a day; and lastly, those who were very much attacked by that dreadful evil, were allowed three quarts and more. I observed wonderful effects of this remedy on board our ship. Amongst other scorbutic patients, we had two who were scarcely a few days out at sea, when the first symptoms of the scurvy constantly appeared, and rapidly increased to a very violent and dangerous degree; their gums were bleeding and ulcerated, their teeth loose, their feet oedematous, with large, livid, and purple blotches; the swelling, when pressed by a finger, would leave a pit for a good while; the urine smelt offensively putrid, and contained long filaments: and one of the men lost entirely the use of his limbs, which became contracted: these two patients were not only quite restored by the copious use of the *sweet-wort*, but one of them acquired a quite new set of gums, the old ones being much impaired, and having fallen gradually away by ulceration; and the other was, in his contraction, much relieved, by constantly applying the warm *grains* of malt, (after the infusion or sweet-wort had been drawn off) to his crippled limbs: I saw another man, whose swelling and purple blotches on the feet disappeared, by frequent fomenta- PRESERVATION OF MARINERS.

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tions with these hot *grains*. The quantity of malt we had on board, amounted to 11 large casks; and during the two first years, kept remarkably well; but in the third year, some lumps were found mouldered in the casks, though some other parts still remained very good; the wort procured from this malt was inferior in quality, but by increasing the quantity of malt and lessening that of water, the infusion was still found a powerful and excellent antiseptic. It has been objected against the infusion of malt, *that it will not cure the scurvy at sea*; * since this *antiscorbutic sea-medicine will only prevent the scurvy from making any great progress for a considerable while*. † But if we consider the two or three cases before mentioned, we shall be obliged to allow that they cannot be considered otherwise than perfect cures. For we must likewise remark on the other hand, that as long as the patient, (who is restored to health by the use of the sweet-wort) remains on board, the causes which produced the scurvy are not removed; the putrid water continues to be his drink, the putrid salt-flesh his diet, and the putrid air is at all times inhaled by him, at least during night, between the decks, all which circumstances keep up and increase the *fomes* of putrescence in the body. A person therefore with a bad habit of body, may be said to have been perfectly

* Capt. Cook's Voyage, vol. ii. p. 289.

† Idem, ibid.

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perfectly cured of the ſcurvy, without daring to leave off the uſe of the ſweet-wort all the time he remains on board, for fear of being again attacked by the ſame evil, whoſe fomes he is continually taking in by way of food, and even by his breath. Malt, as every body knows, is made of barley, and of all the kinds of grains uſed for food, which have ſome analogy with the tribe of graſſes, it contains more of a ſugar-like extract than all the reſt. When the malt is manufactured, the grains of barley are macerated, and then left to ferment in a moderate degree of warmth. This fermentation promotes the growth of the blade, and of the firſt roots; but it likewiſe ſets free the ſweet particles, which were lying as it were dormant, and enveloped in the glutinous and ſtarchy ſubſtance.* The ſweet ſubſtance analogous to ſugar, is more capable of promoting fermentation than any other; the malt being dried juſt at the moment when this ſweet ſubſtance is freed from the others by fermentation, preſerves this precious ſweet juice; and when it is extracted from the malt by the infuſion of boiling water, the liquor is richly charged with the ſaccharine particles promoting fermentation, ſweetening the putreſcent parts of the ſalt fleſh, and diſcharging copiouſly fixed air, which is the only ſubſtance capable of reſiſting powerfully the dreadful effects of putridity.

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* Sage Analyſe des blés. Paris, 8vo. 1776.

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We come now to the *water*, which is one of the moſt ſimple and moſt neceſſary elements; and which, if become putrid and offenſive, greatly increaſes the ſcene of miſery, which opens upon ſo brave and ſo uſeful a ſet of men as the ſailors, who devote their health and their lives for the defence of their country. We obſerved, that though ventilation takes off a great deal of the offenſive ſmell of the water, it remains however ill taſted, putrid and very unwholeſome. I have, by ſeveral experiments, found that putrid water contains a liver of ſulphur, and as nothing quenches more effectually and more ſuddenly the ſpreading effluvia of the liver of ſulphur, and takes off its loathſome taſte than quicklime, I would propoſe that quicklime diſſolved in water, ſhould be poured in ſuch quantities into the putrid water, as may be ſufficient to ſuppreſs both its bad taſte and ſmell. The proportion cannot be aſcertained, as the degree of putridity of the water is various, and muſt of courſe require either a greater or leſs quantity. The quicklime in an inſtant makes the water potable, and in ſome meaſure impregnates it with fixed air, which by the putrid fermentation is entirely gone off. If the water thus prepared be decanted from the precipitate, it will not only be palatable, but likewiſe limpid and clear. *

The

* Since the above was written, I have been informed, that the addition of limewater to the freſh water, intended for the uſe of the people on board of French ſhips, has entirely prevented

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The ſame limewater poured into the putrid bilge-water of the pump-well, will in an inſtant, precipitate its putrid particles, and render the water inoffenſive; to which operation I would always add the rarefaction of the air in the pump-well by fire; and am ſure that both remedies joined together, will not only effectually hinder the effluvia from becoming noxious by their effects, but alſo prevent the water from recovering its prutreſcency ſo ſoon. PRESERVATION OF MARINERS.

We had on board our ſhip the *rob of lemon and oranges*; which has by no means been found to ſucceed in obviating the effects of the ſcurvy; and though uſed on purpoſe by one or two men by itſelf without the addition of any other remedy, our excellent ſurgeon, Mr. PATTON, was of opinion that it did not even ſtop the progreſs of the ſcurvy.

Beſides this preventative, we had the *marmalade of carrots*, which conſiſted of the inſpiſſated juice of carrots, extracted by boiling and afterwards evaporated by fire to the conſiſtence of a ſyrup, Mr. MUZEL-STOSCH of Berlin, had recommended this marmalade to the Society for promoting Arts, Manufactures and Commerce; who referred the ſame to the Board of Admiralty, by whoſe orders ſome of it was prepared, and given to the ſurgeons of our ſhips, in

vented its becoming putrid; when the ſame water, without the addition of limewater, grew very putrid and intolerably offenſive.

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in order that they might make proper trials of it: they found after ſome experiments, that it had nearly the ſame effect as the rob of lemons, and perhaps had moreover the good quality of keeping the belly open, and preventing that conſtipation which is ſo general in ſea-faring men; but it did not cure any ſcorbutic ſymptoms, nor even prevent the increaſe of the evil. The inſpiſſation of the juice of lemons and of carrots by fire, has perhaps deprived theſe two antiſcorbutic ſubſtances of thoſe properties, which might be expected from them, if leſs expoſed to the fire; I am therefore of opinion that the *expreſſed juice of lemons* by itſelf is a more powerful antiſeptic, than either the rob or the marmalade of carrots; but as it has been very juſtly apprehended, that the expreſſed juice of lemons will not keep in a good condition for a long ſpace of time; I only beg leave to mention, that the Captain with me obtained about thirty gallons of lemon-juice at the Cape of Good Hope, to which quantity we added about a fifth or a ſixth part of brandy or rum which preſerved the lemon-juice during the ſpace of thirty-two months in ſo good a condition, that it really appeared to us to be as good, as if it had been freſh expreſſed. This acid mixed up with ſugar and given to ſcorbutic patients, will undoubtedly with the other remedies greatly promote their recovery. Theſe few remarks and hints will I hope diſcloſe ſuch a method of preventing the deletorious effects of the ſcurvy on board the Royal

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Royal Navy, by effectually ſweetening of the food and water, and meliorating the noxious effluvia of the confined air between decks; eſpecially if they be added to the various methods propoſed and tried by Capt. Cook, in regard to the cleanlineſs of the perſons, the airing of the bedding, changing of clothes, the airing of the ſhip by fire and fumigation, and the regulation of keeping the crew at three watches, inſtead of putting them as is commonly termed, at watch and watch. PRESERVATION OF MARINERS.

By the help of the regulations juſt now exhibited, and ſome of the before mentioned prophylactics, our whole ſhip's crew enjoyed in general a very good ſtate of health: and though we often paſſed in a few weeks from extreme cold, (where we were ſurrounded by hundreds of ice-iſlands, and had ſnow and ſleet pouring down on our decks;) to the moſt intenſe degree of heat, i. e. from 27° to 80° or 90° of Fahrenheits Thermometer, we were not deprived of the ineſtimable bleſſing of health.

The diſeaſes which prevailed in the ſhip, when we were in the cold antarctic regions, where we often had hard blowing weather with ſnow, ſleet, and cold penetrating rain and fogs that were continued for ſeveral days, conſiſted chiefly in ſlight *colds*, rheumatiſms, ſore throats, and ſwellings of the glands: which latter circumſtance was, according to my opinion, cauſed by the ice-water; for when we filled thirty or forty caſks with ſmall pieces

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of ice, on which ſome diſſolved ice-water was poured, and then ſtruck them down into the hold, the temperature of the air was commonly very ſuddenly altered, ſo that from 50° of Fahrenheits Thermometer, the mercury at once fell down to 35°; and beſides this it is well known that ice expels all fixed air from water, nor is the melting of the ice by fire, an operation which can properly reſtore its natural quantity of fixed air to it. The want of which may very probably cauſe obſtructions in the glandular ſyſtem of our body.

Beſides the above, the chief diſeaſes were *fevers*. However our ſhip's company was more free from them, than might be expected on a voyage, where we underwent ſo many changes of climate. In the year 1774, in February, March, and April, after we left the cold climates, and were advancing towards the milder regions, the Captain, my ſon, my ſervant, and two or three perſons more in the ſhip were attacked by the *bilious colic*; among its ſymptoms were acute pains, and the diſeaſe roſe to a dangerous height; the Captain eſpecially grew by neglecting the diſeaſe in the beginning, very weak, and had for about twenty-four hours a continued hiccough, however, by the indefatigable aſſiduity and ſkill of Mr. PATTON, our excellent ſurgeon, the patients were reſtored to health; and though they recovered but ſlowly whilſt we were at ſea, for want of freſh and nouriſhing food,

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restoratives and greens; yet as soon as we came to Taheitee they durst not venture to eat any of the common fruits of the country, as bread-fruit, coco-nuts, and bananas, because they renewed their pains; but having at last ventured to eat the fine apples of this country, (*Spondias*) which have a peculiar kind of tartness joined to an agreeable sweetness much approaching to the taste of pine-apples; they soon felt the salutary effects of this most excellent fruit, and were in a few days perfectly restored. PRESERVATION OF MARINERS.

The *sea-scurvy* did not make such ravages on board our ship as might have been expected, on account of the regulations enumerated before and the use of the excellent prophylactics and remedies, which were freely administered, and of which we have spoken very fully.

The *venereal disease* was very frequent among our ships-company, so that sometimes thirty or forty persons were at once infected; but the vigilance and skill of Mr. Patton always prevented this disease from rising to any great height, and from leaving any dangerous effects. I cannot conclude this article without mentioning, that I have lately learnt from a letter written by Dr. HENSLER, Physician to the King of Denmark, to a friend of mine, who kindly communicated its contents to me, that he has collected many very old historical facts from Chronicles and Records, by which it appears beyond a possibility of doubt, that this evil

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was known in various parts of Europe ſeveral centuries before the diſcovery of America by Chriſtopher Columbus in 1493, and it is particularly to be remarked that in the North of Germany the friars and monks were obſerved to diſſeminate the evil more than any other ſet of people. As this learned and ingenious gentleman intends to communicate to the public the reſult of his enquiries, which I have here the happineſs to announce, we ſhall be farther convinced by irrefragable proofs, of the facts already aſſerted in the Philoſophical Tranſactions, vol. xxvii and xxxi. N°. 365, 11.

I cannot omit here a circumſtance which befel us, and might perhaps have proved fatal to many of us, if proper care had not been taken to prevent the ill conſequences of it. When we were at anchor at Port Sandwich in Mallicollo, on the 23d of July, 1774, our people caught in the night two or three large reddiſh fiſh, which they immediately cleared of the garbage and ſcales, and cut the belly and gills open, with ſome of the fins, ſo that when I got up in the morning I ſuſpected them to be a new kind of fiſh, as we we were not able to deſcribe or examine them in this mangled ſtate: but as we hoped to ſtay many nights more in that place, I expected to obtain other ſpecimens for examination; however we removed from that port the day after, without catching another fiſh of the ſame kind. When we were at New Caledonia, a ſailor caught another fiſh of the ſame ſpecies during the.

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the night, and had unfortunately thrown away the garbage, ſcraped the ſcales, and cut away the gills and fins. The ſcarcity of freſh food made this laſt fiſh a deſirable object, notwithſtanding the eating of the former had cauſed very alarming ſymptoms. The ſailor therefore ſalted the fiſh, and let it hang three or four days, and then eat it in company with his meſs-mates, without feeling the leaſt bad effects from this imprudent ſtep. The fiſh had in its mangled ſtate a ſimilarity to the red gilthead (*Sparus Pagrus, Linn.*) which is the more probable, ſince Quiros obſerved that his whole ſhip's crew were poiſoned at the ſame place by a fiſh, which he called *Pargo.** The ſame night that the reddiſh fiſhes were caught at Mallicollo, ſeveral rock-fiſh, (*Labri*) an Indian ſucking-fiſh, (*Echeneis Neucrates*) and a ſhark nine feet long were likewiſe caught and eaten that day, without cauſing any alarming ſymptoms. When we came to New-Caledonia, a native killed at the mouth of a freſh-water river on the reef, a new cartilaginous fiſh of the genus called by Linnæus *Tetrodon*. The Captain's Clerk bought it for the Captain, and after we had made a deſcription and ſketch of it, it was ordered the next day for dinner. My ſon as well as myſelf told Capt. Cook that we were of opinion the fiſh was not proper for food, as it belonged to a ſuſpicious claſs; but the

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* Dalrymple's Collection of Voyages, vol. i. p. 140, 141.

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Captain was of opinion, that he had eaten the ſame kind of fiſh in the laſt voyage on the coaſt of New Holland, and this was ſufficient to quiet our apprehenſions. Whilſt we were at ſupper, the ſervant ſhewed us the liver, which looked very tempting, for people who had been for ſome time deprived of freſh food; we had it therefore fried, but as it came after ſupper, I ate of it about the ſize of two half-crown pieces, and the Captain with my ſon only taſted it, each to the ſize of about half a crown piece. It had no bad taſte and we expected to have a good dinner of the fiſh next day. In the morning about three o'clock I awoke from an uneaſineſs ſimilar to that when the ſtomach is out of order on account of a ſurfeit. I ſat upright in the bed and found my head giddy and ſwimming, I wanted to remove a chair from before the bed, which in my hands was as light as a feather, and I found I could not diſtinguiſh heavy things from light ones. When I began to walk, I reeled from one ſide of the cabin to the other. I felt in the ſtomach a heavineſs and a burning, which extended all the length of the gullet, as if it had been excoriated, and my extremities were benumbed. I had a ſtool and in order to alleviate the ſtomach, endeavoured to void by vomiting its contents, but this cauſed ſuch a burning all along from the mouth to the ſtomach, that I thought the whole to be wounded. I waked Dr. Sparrman, and ſpoke to him about my ſituation; as he was ſeparated only by a deal

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a deal partition from the Captain's ſtate room, Capt. Cook overheard our diſcourſe, and tried to get up, when he found that he had the ſame ſymptoms which I experienced. I then waked my ſon, who was in the ſame ſituation. The Captain ſent for our ſurgeon Mr. PATTON, who preſcribed us plenty of warm water, in order to free the ſtomach of any remains of this dangerous diet, and then gave us ſome diaphoretics, and ſalts, which in a few days reſtored us to our former health; though the giddineſs of the head, the numbneſs of our hands and feet, a conſtant chillneſs, and ſome few pains were not quite removed till after about eight or ten days. A dog which had eaten the remainder of the fried liver, and a hog given me by an old man at Tanna, which had devoured the garbage of the fiſh, fell likewiſe very ſick, and the latter died the next day. Several natives coming on board, ſaw the fiſh hanging, and gave us to underſtand by ſigns, that it was unwholſome food, for they pointed to their ſtomach, and ſhewed that it cauſed pains there, and afterwards laid their hand to the cheek and ear, and made a motion of the head as if they were going to ſleep. I feigned not to comprehend the meaning of theſe ſigns, and as if I believed they wanted the fiſh to eat, I ordered it to be given to them; but they ſhewed the moſt unequivocal ſigns of abhorrence, when it was offered to them.

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The fiſhes eaten at Mallicollo, cauſed in the evening violent reachings, gripes and looſeneſs, preceded by an uneaſineſs ſimilar to that which I had felt; a violent head-ach and pain in the face, with a burning heat, followed immediately after this; and extended to the hands and legs. The pulſe was by no means feveriſh or ſtrong, as might have been expected from the great heat which every one felt, but was rather low and weak. About ſixteen or eighteen perſons who had eaten of the fiſh were all ill of this poiſon, and had more or leſs the ſame ſymptoms, to which we muſt add the ſame torpor in the extremities. The pains continued for ſeveral days in the ſtomach and in all the limbs, with the heat and alſo a giddineſs, which would not ſuffer them to walk or hardly to ſtand. All along the throat they felt a pain equal to that of an excoriation in that part. In ſome few patients the ſalival glands were ſwelled, and diſcharged an extraordinary quantity of ſaliva, ſo that it run out of their mouths involuntarily. In a few a painful erection of the penis was obſerved: and ſome even found that their teeth were grown looſe. When they recovered it was but ſlowly, and as often as they were expoſed to cold, the pain and ſtiffneſs of the limbs returned, and upon the whole every evening the ſymptoms of reſtleſſneſs, pain and heavineſs were renewed, nay, after the expiration of a fortnight when they were quite free from pains and other ſymptoms, they found themſelves chilly.

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The ſurgeon preſcribed the ſame remedies, which we had taken by his directions. A tame Taheitean parroquet, which had eaten a very ſmall morſel of the fiſh died in great agonies. All the dogs, which had been fed with the bones, fins and entrails of the fiſh, fell violently ſick and continued ſo for a long while: one that had retired into a boat and was lying in ſome water became quite paralytic, and was ordered to be caſt over-board to ſhorten his agonies: another dog equally ſick, received from his maſter an infuſion of tobacco by way of emetic, but he fell a ſacrifice to the remedy. A hog which had eaten of the entrails, likewiſe died within 24 hours. PRESERVATION OF MARINERS.

The circumſtances here related ſeem to intimate, that the *Sparus Pagrus* or *Pargos* is not a poiſonous fiſh, but only becomes noxious, when it has taken ſome dangerous food. The fiſh which were caught at Port Sandwich, together with the *Pagrus*, proved wholeſome, which proves that their food differs from that of the *Pargos*. The *Tetrodon Sceleratus* alone ſeems to be poiſonous of itſelf, ſince the natives of New Caledonia were acquainted with its noxious and deletorious quality; but if we again conſider, that the *Tetrodon* cauſed the ſame ſymptoms as the *Pargos*, (only in an inferior degree, becauſe we ate ſo very little of it) it is obvious, that the *Tetrodon* likewiſe muſt have received this deletorious quality from the nature of its food. I wiſh to have had it in my

power

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power to examine the entrails of all theſe fiſh, becauſe I do not in the leaſt doubt, but the examination of them would have immediately ſhewed the true cauſe of theſe ſymptoms; and as nothing occurs, which might have cauſed theſe effects, I ſuſpect that theſe fiſh live chiefly upon blubbers, *(Meduſæ)* ſome of which we know to be of a very burning quality, when brought into contact with our ſkin, and probably would be capable of producing all the abovementioned ſymptoms if taken internally. It might be here objected, that if the blubbers are ſo noxious, how happens it that the fiſh eat them without being affected in the ſame manner as we were: but if we conſider, that fiſh eat, without injury, even manchenil-apples *(Hippomane Mancinella)* which would kill a man; it becomes ſo much the more probable that fiſhes may live on a food, which to men is highly noxious. The natives, however, ſeem to be well acquainted with the poiſonous quality of the fiſh: it would be adviſeable therefore to enquire of them whether it may be eaten with ſafety, and they are every where good-natured enough to give fair warning when there is the leaſt danger. This circumſtance leads us to make the following remarks: the firſt is, that mankind ought to be conſidered as the members of one great family; therefore let us not deſpiſe any of them, though they be our inferiors in regard to many improvements and points of civilization; none of them is ſo deſpicable that he ſhould not, in ſome one point or other, know

know more than the wiſeſt man of the moſt poliſhed nation. This knowledge may be eaſily obtained from them by friendlineſs, kindneſs, and gentleneſs; and if ſo bought it is cheaply obtained. The ſecond obſervation points out the neceſſity of ſending out men verſed in ſcience, and the knowledge of nature on all occaſions to remote parts of the world, in order to inveſtigate the powers and qualities of natural objects; and it is not enough to ſend them out, but they ought likewiſe to be encouraged in their laborious taſk, liberally ſupported and generouſly enabled to make ſuch enquiries as may prevent their fellow creatures in future times from becoming ſacrifices to their own ignorance. PRESERVATION OF MARINERS.

Quibuſdam & iis quidem non admodum indoctis, totum hoc diſplicet, philoſophari. Quidam autem id non tam reprehendunt, ſi remiſſius agatur: ſed tantum ſtudium, tamque multam operam ponendam in eo non arbitrantur.

M. TULLIUS CICERO.

De finibus bon. & malor. lib. i. initio.

FINIS.

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ERRATA.

Journal, *Page* 9, *line* 12, in *read* and

13, *l. penult after* 27*th* add *of July.*

Observations, *p.* 14, *l.* 16, *Isles*, read *Isle.*

l. 17, *the Immer*, read *Immer.*

p. 23, *l.* 10, *besaltes*, read *basaltes.*

p. 30, *l.* 3, *Kirguelen*, read *Kerguelen.*

p. 80, *note* 1, *and*, read *in the.*

p. 122, *l. last*, *East* read *West.*

p. 125, *l.* 8, *s.* read *se.*

p. 285, *l.* 6, *(from below,) spontanous*, read *spontaneous.*

p. 316, *l.* 1, 2, read *and become the remote offspring of such happy tribes.*

p. 336, (*at the beginning*) CHAP. V. *read* SECTION VI.

p. 367, *l.* 15, *Potatoa* read *Potatou.*

p. 382, (*at the beginning*) CHAP. VI. *read* SECTION VII.

p. 435, *l.* 1, *Section VII.* read *Section VIII.*

p. 459, *l.* 11, *Eteehe* read *E-teihee.*

p. 498, *l. penult*, *Berger*, read *Bergius.*

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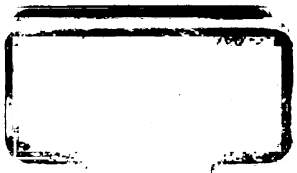

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